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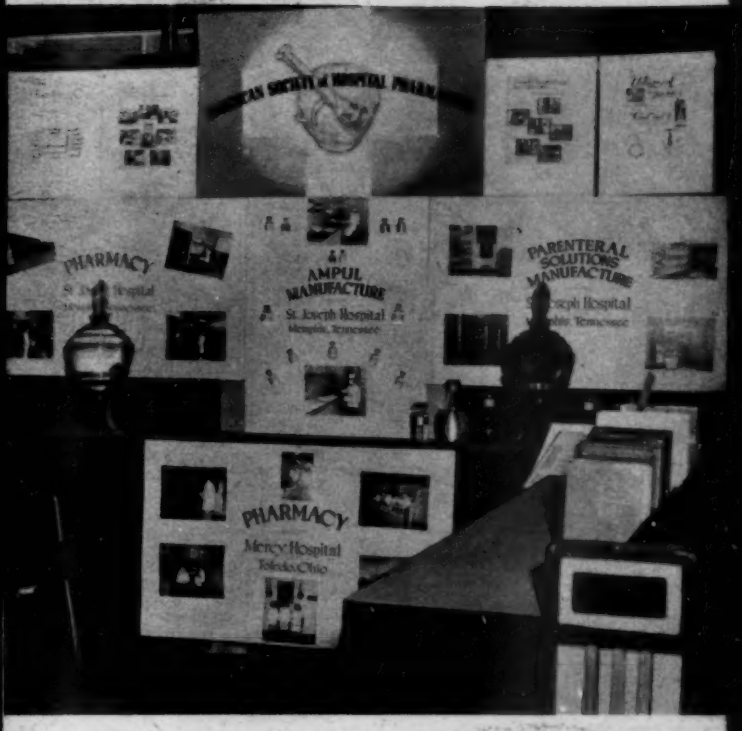

A. S. P. H. EXHIBIT
CATHOLIC HOSPITAL ASSOCIATION
BOSTON JUNE, 1947

THE BULLETIN
OF THE

THE BULLETIN is published bimonthly by the American Society of Hospital Pharmacists, a national organization devoted to the profession of hospital pharmacy, dedicated to the interests of the hospital pharmacist, and pledged to co-operate with the American Pharmaceutical Association with which it is affiliated.

Contributions of articles by hospital pharmacists, or by others interested in the progress of this important branch of the public health profession, will be accepted if they are of general interest to the hospital pharmacist. The editors reserve the right to revise all material submitted, if necessary.

Manuscripts submitted for publication should be typewritten in double spacing on one side of paper 8 1/2 x 11". Whenever possible a photograph, drawing, or printed form to illustrate the topic that is discussed in the article should be included.

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American Society of Hospital Pharmacists

CORRESPONDENCE

Dear Sirs: I beg to acknowledge with thanks the receipt of THE BULLETIN of the American Society of Hospital Pharmacists, Vol. 2 (1945); Vol. 3(1946), and Vol. 4(1947):1, which you have been so kind as to present to our library. We are looking forward to receiving this publication in the future.

W. Bondeson
Kungl, Farmaceutiska Institutes Bibliotek
Stockholm, Sweden

Dear Sirs: This acknowledges receipt of the No. 1 BULLETIN of your Association. The writer was pleased to receive this BULLETIN, and to read the constructive contents.

Please accept the best wishes of every Member of the Pennsylvania State Board of Pharmacy in this, a newly organized and outstanding division of pharmacy.

Wilbur B. Goodyear
Secretary
Pennsylvania State Board of Pharmacy

Dear Sirs: The 49th Annual Convention of the American Hospital Association to be held in St. Louis, September 22 to 25, promises to break the attendance record set at Philadelphia last year. The contribution your organization made to that convention last year by your excellent exhibit was appreciated by the membership of this Association.

We are enclosing application forms for your consideration, hoping that you are planning to present a visual display of the activities of your organization again this year. Your early reply would be appreciated as we should like to make the assignment of space as soon as possible so that each exhibitor may complete his plans. If you have questions that are not covered in the enclosed form, please let us know.

W. G. Simmons
Secretary, Council of Association Relations
American Hospital Association

Dear Sirs: I want to take this opportunity to tell you that every time THE BULLETIN arrives I marvel at the good job all of you are doing. In both, content and appearance THE BULLETIN is a work of craftsmanship.

I also want to thank you for the splendid work all of you have done at the Institute on Hospital Pharmacy at Ann Arbor last summer. I had the privilege of being present, and benefited greatly.

It has been a great stimulant for one, who has worked long years in a hospital pharmacy, yet, strangely enough, having little contact with other pharmacists in the country. The experience was invigorating and refreshing. I hope that another such institute as well arranged as the original one will soon materialize.

I. Gershenson
Sydenham Hospital
New York, New York

Dear Sirs: A copy of THE BULLETIN of the American Society of Hospital Pharmacists has come to us through a hospital pharmacist, and it has impressed us very much. The material found there-in has proven of great interest and value so we are going to ask if it is possible for you to put us on your mailing list (and bill us for same) to receive this publication.

We operate a strictly professional pharmacy in the Duluth Clinic and employ four registered pharmacists at all time. May we hear from you in regard to our request? Thank you.

R. A. Callander
Pharmacist-Manager, The Clinic Pharmacy
Duluth, Minnesota

EDITORIAL

There appears in this issue the first of a series of three papers discussing the training of hospital pharmacists, a subject of vital importance to hospital management and to the profession of hospital pharmacy. For the past several years many hospitals have been providing training programs, or internships in hospital pharmacy. These internship programs have been pioneering efforts by a few to accomplish two principal objectives: first to teach the intern the technical and administrative aspects of the practice of pharmacy in hospitals and second to overcome the inadequate academic training offered by most colleges of pharmacy in certain subjects. In evolving their training programs each hospital has made specific contributions in certain broad areas of what should be a well developed internship. But none of the hospitals as yet have perfected what even they would consider as an attainable outstanding program to train hospital pharmacists.

The purpose of this series of papers is to provoke thought among the members of the Society. It will be accepted generally that the future status of hospital pharmacy depends fundamentally on the education and the specialized training of those who choose this profession. As Mr. Clarke points out there are today several trends: in social legislation, in hospitalization or comprehensive medical care plans, in government service and in the establishment of private medical centers, leading to increased hospital care of the patient. These factors, of course, inevitably lead to the increased practice of hospital pharmacy and the urgent need for better training of those who are to provide pharmacy service for the sick.

In this issue Mr. Donald A. Clarke discusses the selection and outlines the training of the pharmacy intern. From his outline of the details of hospital pharmacy training which should be presented to the pharmacy intern it is evident that a competent pharmacy staff, well grounded in the several facets of hospital pharmacy practice and possessing the true spirit of the teacher is fundamental.

In the next issue of THE BULLETIN Mr. Leo F. Godley will discuss the undergraduate training of prospective hospital pharmacists. As a group, hospital pharmacists will strongly approve the fundamental principles which have motivated the recommendations for revision of undergraduate training in pharmacy. This agreement will be predicated on the indisputable fact that from their own experience hospital pharmacists have found their training in certain subjects inadequate to meet the demands of hospital practice. Especially in the fields of biological chemistry, physiology and pharmacology have hospital pharmacists felt the need for more adequate training to assist them in their everyday professional relations with the medical and allied staffs.

In the third paper of this series Mr. John J. Zugich will evaluate some of the internship programs now in effect. He will discuss some of the shortcomings of present programs and will indicate some of the aspects of hospital pharmacy practice which should be more strongly emphasized if the intern is to be well prepared to deal with the many important administrative and professional problems he will be called upon to solve when he is in charge of a department.

It is evident as more and more hospitals adopt pharmacy internship programs, that some measures must be taken to assure adequate training in hospital pharmacy and to prevent the exploitation of intern pharmacists. At the present time principles for approving pharmacy internships are being drawn up by the Minimum Standards Committee of the American Society of Hospital Pharmacists and the Pharmacy Committee of the American Hospital Association. When these principles are adopted and an approval body established to evaluate hospital internships, hospital management and the profession of hospital pharmacy may look forward with anticipation to a very high level of pharmacy practice in the Nation's hospitals.

In the meantime members of the Society, and others interested in the progress of hospital pharmacy are invited to comment on the papers presented and to offer suggestions regarding the undergraduate curriculums and the training of the pharmacy intern. These comments and suggestions will be published in the Correspondence section of THE BULLETIN.

THE *New* DRUGS IN THE U.S.P. XIII

by

L. F. Tice

THE thirteenth revision of the United States Pharmacopœia became official in the United States on April 1, 1947. The new Pharmacopœia has included a long list of new monographs; some for drugs newly developed and proven therapeutically useful, others for drugs formerly recognized in the National Formulary. Still other monographs represent an acceptable dosage form for drugs previously recognized but for which no dosage form had been adopted. There is, of course, a group of products recognized as "pharmaceutical necessities" in that they are needed in the preparation of U. S. P. products. It is the policy of the Pharmacopœia to recognize, in monograph form, all ingredients of U. S. P. preparations since otherwise variations in the finished product might result from using unstandardized components.

The Pharmacopœia in adopting an official name for a drug does so by the use of a non-proprietary title, even though the drug may not be available except under a proprietary name. In this article the author has attempted to provide the pharmacist and physician with a correlation of proprietary names and U. S. P. titles and also to discuss briefly the properties and uses of the newly recognized drugs and preparations. Where drugs have been in use for a long time, or if they were formerly recognized in the National Formulary, only a brief statement is made.

Aluminum Phosphate Gel

This is an aqueous suspension containing 3.8-4.5 per cent of $AlPO_4$. It is permitted to contain certain flavors, sweetening agents and sodium benzoate (0.5%) as a preservative. This product is a white, viscous suspension from which small amounts of water may separate on standing. It is used as a gastric antacid similar to Aluminum Hydroxide Gel. The acid neutralizing power is not as great as that of aluminum hydroxide but it is sometimes preferred because it does not interfere with the assimilation of phosphates from the intestine. The dose is 8 cc. and Wyeth, Inc. market this product as Phosphaljel.

* Assistant Dean and Director of the Pharmacy Department, Philadelphia College of Pharmacy and Science.

American Journal of Pharmacy; Vol. 119; No. 4; April, 1947.

Aminopyrine Tablets

These tablets simply represent a dosage form for a drug long official in the Pharmacopœia. Aminopyrine is a very effective analgesic and antipyretic. It has the one disadvantage of occasionally causing agranulocytosis when used over a period of time. The usual dosage is 0.3 Gm. The Winthrop Chemical Company supplies this drug under the name *Pyramidon*.

Anhydrohydroxyprogesterone
Anhydrohydroxyprogesterone Tablets

This drug chemically is pregneninolon. It represents an orally effective substance having the action of the corpus luteum and it is primarily responsible for the development of the secretory phase of the menstrual cycle and for the maintenance of pregnancy. It is used in certain irregularities of the menstrual cycle, sometimes combined with estrogens. It is useful in some cases of painful menstruation wherein it seems to inhibit uterine motility. The most frequent application of this drug and others having the effect of corpus luteum hormone is in the prevention of abortion or miscarriage where hormonal insufficiency is the causative factor.

Anhydrohydroxyprogesterone is sold under the following proprietary names:

Pranone—Schering Corp.

Lutocylol—Ciba.

Progestoral—Roche Organon.

The oral dose is 10 mg.

Anticoagulant Acid Citrate Dextrose Solution (A.C.D. Solution)

A solution containing in each 100 cc. 2.0-2.4 Gm. of sodium citrate, 0.75-0.85 Gm. of citric acid and 2.3 to 2.6 Gm. of dextrose. It is sterile and pyrogen-free and is used in the preparation of whole blood and plasma for indirect transfusion. It is also used in collecting blood which is to be centrifuged in the preparation of plasma. The presence of the small amount of citric acid and the dextrose prolongs the life of the cells until the blood can be transfused or centrifuged.

Antimony Sodium Thioglycollate
Antimony Sodium Thioglycollate Injection

This drug is a pink or white powder with a faint odor. It is discolored by light and should be stored in tight light-resistant containers. It is used in aqueous solution (in water for injection) and containing sodium citrate and thioglycollic acid as preservatives. Antimony Sodium Thioglycollate is used in the treatment of certain protozoal infections, e. g., granuloma venereum, kala azar and trypanosomiasis. The dose is 50 mg. given intramuscularly or intravenously every 2-4 days. It is sold by Hynson, Westcott and Dunning both as powder and in ampuls as a solution for injection (0.5 per cent).

Apomorphine Hydrochloride Tablets

This is a dosage form for apomorphine hydrochloride which has been used for many years. The tablets usually supplied are hypodermic tablets which are dissolved in a small quantity of water for injection prior to use. When injected as an emetic the dose is 5 mg. subcutaneously.

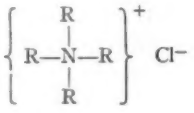
Bentonite Magma

Bentonite Magma was recognized in the N. F. VII. Bentonite is a native, colloidal, hydrated aluminum silicate, i. e. a clay. It was named Bentonite because original deposits were obtained in

the Fort Benton formation of the Upper Cretaceous of Wyoming. Bentonite has been defined by the U. S. Geological Survey as "a transported stratified clay formed by the alteration of volcanic ash shortly after deposition." It is used pharmaceutically to make the magma which in turn is used as a suspending agent, e. g. in Calamine Lotion. In some products it is superior to gums as a suspending agent.

Benzalkonium Chloride
Benzalkonium Chloride Solution

This is chemically a mixture of alkyl dimethyl-benzyl ammonium chlorides and it is one of the newer antiseptics known as the cationic type. Chemically it is a quaternary ammonium salt having the type formula



From this formula it will be seen that the active ion bears a positive charge and thus the name cationic (cathode seeking). It is employed in various concentrations as a bactericide and as a fungicide. Solutions of Benzalkonium Chloride have a very low surface tension due to the fact that this substance lowers interfacial tension. Solutions, therefore, foam or froth on shaking. Since it bears a positive charge the benzalkonium ion is incompatible with anionic wetting agents including soap, which therefore should not be used with it or prior to its use for the disinfection of the skin.

The following strengths are employed for the various purposes listed:

disinfection of skin	1:1,000
wet dressings	1:10,000-1:5,000
irrigation of eye, ear, nose and throat	1:10,000-1:5,000
sterile storage of instruments	1:5,000-1:1,000

(to prevent rusting 2 Gm. of sodium nitrite and 5 Gm. of sodium carbonate should be added to each liter of solution.)

Benzalkonium Chloride is sold as a solution under the proprietary name of *Zephiran Chloride* by the Winthrop Chemical Co.

Benzyl Benzoate
Benzyl Benzoate Lotion
Benzyl Benzoate, Saponated

Benzyl Benzoate is the benzyl ester of benzoic acid. It is a clear, colorless, oily liquid having a slight aromatic odor. Although it is sometimes used internally, the new Pharmacopœia recognizes it for the treatment of scabies and pediculosis. Benzyl Benzoate Lotion is a 25 per cent emulsion in a triethanolamine oleate base. It is employed in scabies by having the patient take a hot bath and then applying the lotion over the entire body from head to foot and allowing it to dry.

Saponated Benzyl Benzoate is a concentrate which, when diluted with three parts of water and shaken, gives the finished lotion.

These products were found very effective by the Armed Forces in the treatment of scabies.

Calamine
Calamine Lotion

These products were both recognized in the N. F. VII. Calamine owes its therapeutic virtues as a mild astringent and protective to zinc oxide, which is its principal constituent. Its superiority over zinc oxide is only due to its flesh-like color. The Lotion is an aqueous suspension stabilized with Bentonite Magma.

Calcium Phosphate, Dibasic

This calcium salt, also known as dicalcium orthophosphate and D. C. P., has the formula $CaHPO_4.2H_2O$. It is a white, odorless, tasteless, almost insoluble powder. It is used orally as a means of supplementing dietary calcium in those cases where an increase in the calcium supply is indicated, e. g., the treatment of mild rickets, as a prophylactic measure for rapidly growing children, and during pregnancy and lactation. The administration of vitamin D as an adjunct is quite common. Dicalcium phosphate is claimed to be superior to other calcium salts since it provides a favorable calcium-phosphorus ratio. It has been fairly well established that the utilization of calcium by the body is dependent upon both vitamin D and an adequate phosphorus supply. The dose of Dibasic Calcium Phosphate is 1 Gm.

Carbachol
Carbachol Injection
Carbachol Tablets

This drug is chemically carbamylcholine chloride having the formula $NH_2CO.O.CH_2.CH_2.N(CH_3)_3Cl$. It is a white or faintly yellow crystalline substance, odorless and hygroscopic. It is quite soluble in water, giving a neutral solution.

An understanding of the pharmacology of this drug involves a knowledge of the parasympathetic nervous system. These nerves, also known as cholinergic, are believed to produce stimulation of the receptor muscles through the mediation of acetylcholine at the nerve endings. The administration of acetylcholine as a stimulant to the parasympathetic nervous system produces a transient effect since it is not stable in body tissues, being rapidly hydrolyzed by esterases. Carbachol is much more stable than either acetylcholine or acetyl-β-methylcholine (Methacholine U. S. P.) and, consequently, it can be given both orally and by subcutaneous injection as a parasympathetic stimulant. It is used clinically in the relief of post-operative urinary retention and abdominal distention, for the relief of acute pain due to vasospasm in peripheral vascular disease, and for the treatment of paroxysmal tachycardia. Overdosage may cause serious toxic results and patients vary in their response to its use. The average dose is 0.25 mg. subcutaneously.

Carbachol is also used in a concentration of 1.5 per cent in solution and in an ophthalmic ointment by the ophthalmologist for the treatment of glaucoma to relieve intraocular tension.

Carbachol is sold by Merck and Company as *Doryl* in the form of 2 mg. tablets for oral use and ampuls (1 cc. containing 0.25 mg.). For ophthalmic use the drug is sold under the name *Carcholin* in powder form in bottles containing 0.5 Gm.

Cholera Vaccine

This is a sterile suspension of killed cholera vibrios (*Vibrio comma*), of strains selected for high antigenic efficiency, in isotonic sodium chloride solution or other suitable diluent. Each cc. contains at least 8,000 million organisms.

Cholera Vaccine is used for active immunization against cholera. It is given hypodermically with an initial dose of 0.5 cc. followed in 7-10 days with 1.0 cc., the latter dose repeated once after a similar time interval. The product should be stored between 2° and 10° C.

Cholesterol

Cholesterol, also known as cholesterin, is a sterol which occurs in many animal fats and also both free and combined as esters in wool fat. It is a white or faintly yellow, almost odorless substance having a pearly luster and prepared in leaflet or granular form. Light or high temperature causes it to become discolored. It is insoluble in water but soluble in chloroform, petroleum, benzin, ether

and fixed oils. Cholesterol and its esters have the capacity of absorbing water, forming water-in-oil emulsions and it is these components which give wool fat this property. The Pharmacopœia recognizes Cholesterol as an ingredient of Hydrophilic Petrolatum which owes its hydrophilic or water-absorbing properties to the ingredients stearyl alcohol and wool fat as well as Cholesterol.

Coal Tar
Coal Tar Ointment

Coal Tar and Coal Tar Ointment were both official in the N. F. VII. The new Pharmacopœia now recognizes them. The U. S. P. XIII ointment is practically identical with that in the N. F. VII. Coal Tar Ointment is used for its antiseptic and stimulating effect in dermatology.

Corn Oil

This is a refined, fixed oil obtained by expression from the embryo or germ of *Zea Mays*. It is a clear, light yellow, oily liquid with a faint, characteristic odor and taste. Corn oil is recognized officially as a pharmaceutical necessity since it is one of the oils that may be used in the preparation of Medicinal Soft Soap.

Cupric Citrate
Cupric Citrate Ointment

Cupric Citrate is a green or bluish-green, finely crystalline, odorless powder. It is prepared in an 8 per cent ophthalmic ointment base containing wool fat, liquid petrolatum and white petrolatum, and used in the treatment of conjunctivitis, particularly in trachoma.

Desoxycorticosterone Acetate

This is the acetate of 11-desoxycorticosterone, one of the hormones of the adrenal cortex. It is made synthetically and it is a white, crystalline, odorless powder, insoluble in water but somewhat soluble in oils. It is used in various shock states, such as those resulting from burns, to help establish the electrolyte and water balance of the blood, and to exert a sparing effect on the adrenal cortex. It is also employed in Addison's disease, although it does not completely take the place of adrenal cortical extracts, since the latter contain other principles. Some success has attended its use following debilitating diseases as a means of hastening convalescence.

The dose by intramuscular injection in oil is 5-10 mg. daily. Pellets (75 mg.) are used by tissue implantation and a solution (10 mg./cc.) in propylene glycol and alcohol is used sublingually in 0.1 cc. doses repeated to provide the required daily dose. Oil solutions for intramuscular injection are sold under the following names:

Doca—Roche-Organon.

Percorten—Ciba Pharmaceutical Specialties Co.

Cortate—Schering Corp.

A solution for sublingual use is sold by Schering as *Cortate, Sublingual.*

Digitoxin
Digitoxin Injection
Digitoxin Tablets

Digitoxin is described in the Pharmacopœia as either pure digitoxin ($C_{41}H_{64}O_{13}$) or a mixture of cardioactive glycosides obtained from *Digitalis purpurea* and consisting chiefly of digitoxin.

Several products meet the requirements of the U. S. P. XIII monograph for Digitoxin. One, *Digitaline Nativelle*, of French origin, is reported to have an M. L. D. of about 0.42 mg./Kg., using cats. Other products, produced in large quantities in the United States have an M. L. D. found in different tests to range between 0.32 and 0.47 mg./Kg. From the pharmacologic standpoint these products show little if any difference. The therapeutic superiority of Digitoxin over digitalis and its preparations has led many authorities to predict that, in time, Digitoxin will completely displace digitalis in general use. Its superiority lies in the fact that it is a pure principle and it is absorbed so completely from the gastrointestinal tract that its oral and parenteral doses are identical. Digitalis leaf and tincture have the well-known disadvantage of being poorly absorbed from the gastrointestinal tract. It has never been possible to predict accurately the effectiveness when given orally since in its biologic assay the drug is injected intravenously. Digitoxin eliminates this uncertainty, it permits rapid digitalization of the patient, and its rapid absorption prevents much of the nausea and vomiting frequently encountered with digitalis *per se*. Digitoxin has approximately 1000 times the potency of digitalis, i. e. - mg. = 1 Gm. The initial digitalizing dose is 1.2 mg. followed by a daily maintenance dose of 0.2 mg. or according to the patient's needs. It is sold both as tablets and as an injection. In preparing solutions for injection it is dissolved in 40-50 per cent alcohol with small amounts of glycerin. Digitoxin is sold under the following proprietary names:

Purodigin—Wyeth, Inc.

Crystodigin—Eli Lilly and Company.

Cardigin—National Drug Co.

Digitaline Nativelle is sold by the Varick Pharmacal Company, Inc. (a division of E. Fougera and Company, Inc.).

Digoxin
Digoxin Injection
Digoxin Tablets

Digoxin is a glycoside obtained from the leaves of *Digitalis lanata*. It is a colorless, crystalline substance or a white, crystalline powder, odorless and insoluble in water but soluble in dilute alcohol.

Chemically Digoxin is related to Lanatoside C (also newly recognized in the U. S. P. XIII). It differs in being de-acetylated and in having a glucose residue removed by hydrolysis. It is used for digitalis therapy having similar advantages to those possessed by digitoxin over digitalis in that it is a pure principle. The oral dose is 1-2 mg. for digitalization followed by 0.25-0.50 mg. daily for maintenance. The intravenous dose for digitalizing the patient is 1.5 mg. followed by 0.25-0.50 mg. daily as a maintenance dose. It is sold by Burroughs Wellcome and Company.

Diphtheria and Tetanus Toxoids

This is a clear or slightly turbid, yellowish or brownish liquid made by mixing suitable quantities of diphtheria toxoid and tetanus toxoid, each of which possesses adequate potency to permit combining. The toxoids are mixed in such proportions that each cc. or less will contain one individual human dose of each of the active ingredients. This product is used particularly in children for joint active immunization against both diphtheria and tetanus. Since immunization against diphtheria is so universally employed it is now considered highly desirable to immunize the child against tetanus at the same time. Tetanus in children due to puncture wounds, etc., is far too common and hazardous considering the fact that immunization can be obtained at the same time that protection against diphtheria is acquired. The dose is 1 cc. to be repeated twice with intervals of approximately three weeks between injections. If a subsequent Schick test is positive further doses must be given.

Diphtheria and Tetanus Toxoids, Alum Precipitated

This is a product similar to the above except that the toxoids are precipitated by alum and then suspended in saline solution. Only two injections of 1 cc. are usually necessary (4-6 weeks apart) and some physicians prefer this product to the plain toxoid since it contains less foreign protein from the serum from which it is obtained. It also provides a more lasting antigenic response inasmuch as it is injected as a suspension producing a depot from whence it is more slowly released.

Ethylenediamine Solution

An aqueous solution of ethylenediamine containing 67-71 per cent of $H_2N.CH_2.CH_2.NH_2$. It is a clear, colorless or slightly yellow liquid having an ammonia-like odor and a strong alkaline reaction. This product is used in the preparation of Aminophylline Injection U. S. P. XIII in which it may be added as a stabilizer in specified amounts with official sanction.

Gas Gangrene Antitoxin, Bivalent
Gas Gangrene Antitoxin, Pentavalent
Gas Gangrene Antitoxin, Trivalent

These antitoxins are used both as prophylactics and in the treatment of gas gangrene. They are sterile solutions of antitoxic substances prepared in much the same way as diphtheria antitoxin, being obtained from the blood of animals immunized against certain of the organisms involved in gas gangrene.

The Bivalent type contains antitoxins prepared from the blood of healthy animals which have been immunized against the organisms *Clostridium perfringens* and *Clostridium septicum*. The Trivalent includes *Clostridium oldematiens* and the Pentavalent the three already named plus *Clostridium bifermentans* and *Clostridium histolyticum*. In each of the three products there is a minimum requirement of antitoxic potency. All three are directed to be stored at a temperature between 2° and 10° preferably at the lower limit.

Helium

This is an inert gas in which the U. S. P. permits the presence of not more than 5 per cent nitrogen. It is colorless, odorless and tasteless. The medicinal uses of Helium depend entirely on its inertness together with its very low density. When used as a diluent for oxygen in place of nitrogen (as in air) the mixture is much more easily breathed by an asthmatic. Thus a mixture of 80 per cent Helium and 20 per cent oxygen weighs only one-third as much as air and requires only one-half the physical pressure for movement through a tube. In cases where the bronchi are constricted, such as asthma, less effort is required in breathing and the mixture flows more freely into the lungs relieving the labored respiration and anoxia in the patient. The gas is also practically insoluble in the body fluids, a property which makes it the most suitable carrier for the oxygen supplied to divers, since the period of decompression required for the prevention of "caisson disease" is greatly reduced.

Hexylresorcinol Pills

These represent an acceptable dosage form for the administration of hexylresorcinol as an anthelmintic. Hexylresorcinol is probably the anthelmintic of choice in the eradication of roundworms (*Ascaris lumbricoides*). It is also fairly effective in the treatment of infestations of pin worms (*Enterobius Vermicularis*) and dwarf tapeworms (*Hymenolepis nana*). The pills are required to be coated with a tough gelatin coating in order to guard against burns in the mouth in case they are chewed. The average adult dose is 1 Gm. taken preferably on an empty stomach in the morning following a light evening meal. Food is withheld for 4-5 hours and a saline purge or an enema employed to help in the removal of the dead worms. In some cases two or three treatments at three-day intervals may be required. Sharp and Dohme market Hexylresorcinol Pills under the proprietary name *Crystoids Anthelmintic* in two sizes, one for young children and the other for adults.

Hydrophilic Ointment

This is a companion product of Hydrophilic Petrolatum U. S. P. XIII developed as a superior type of base for the incorporation of various drugs. It contains sodium lauryl sulfate, stearyl alcohol, white petrolatum, glycerin and water with methylparaben and propylparaben as preservatives. It is an emulsion base of the type commonly described as a "washable ointment base" and in many instances it is preferable to the older fatty or hydrocarbon bases. Such an ointment permits better release of drugs and antiseptics to the tissues, it is less sensitive to temperature change and it is easily removed from the skin, clothing or bed linens with water.

Hydrophilic Petrolatum

This is a base consisting of: cholesterol, 1 per cent; stearyl alcohol, 3 per cent; white wax, 8 per cent; wool fat, 15 per cent and white petrolatum, 73 per cent. It is far superior to white petrolatum alone as an ointment base and it was developed after extensive research by the U. S. P. Subcommittee on Ointments and Miscellaneous Galenicals. Although it is anhydrous it readily absorbs water or aqueous solutions.

Insulin, Protamine Zinc, Injection

This product has been in use for several years as a means of prolonging the action of insulin. It was originally introduced by Hagedorn in 1936. It is an aqueous suspension of insulin modified by the addition of protamine and zinc chloride at a pH level between 7.1 and 7.4. At this pH the negatively charged insulin (I. P. 5.6) reacts with the positively charged protamine (I. P. 8.0). The precipitate is made still further insoluble by the presence of the small amount of zinc. The product is packaged in 10 cc. vials containing 40 units/cc. and 80 units/cc. The container must be carefully shaken to obtain a uniform suspension before withdrawing each dose. Protamine Zinc Insulin Injection is given intramuscularly either alone or mixed with regular insulin injection according to the established individual needs of the diabetic patient. It is marketed by Eli Lilly and Company, E. R. Squibb and Sons, and Sharp and Dohme, Inc.

Iodopyracet Injection

This is a sterile solution of the diethanolamine salt of 3,5-diiodo-4-pyridone-N-acetic acid in water for injection, containing in each 100 cc. 34-36 Gm. of the salt. It is a clear, nearly colorless liquid and neutral to litmus paper.

This compound contains approximately 49.8 per cent of iodine and it is useful as a contrast medium in intravenous urography. It is administered into the cubital veins in a dosage of 20 cc. (adults) previously warmed to body temperature. Roentgenograms are taken at 5, 15 and 45 minute intervals. Some transient side-effects may take place, such as flushing, nausea and skin eruption. The latter may require a few days to subside. The drug is contraindicated in severe liver disease, nephritis, and uremia and appropriate tests should rule these out before its use. Winthrop Chemical Company sells this product under the name *Diodrast Sterile Solution*. It should not be confused with two other similar Winthrop products which are not used for the same purpose, namely:

Diodrast Compound Solution.
Diodrast Concentrated Solution.

Lanatocide C
Lanatocide C Injection
Lanatocide C Tablets

Lanatocide C is a glycoside obtained from the leaves of *Digitalis lanata*. It is a colorless, crystalline substance or a white crystalline powder soluble only to the extent of one gram in 20,000 cc. of water. It is soluble in alcohol to the extent of 1 gram in 45 cc. and the injection is prepared using 70 per cent alcohol as the solvent. Chemically, Lanatocide C is closely related to Digoxin. It is used for digitalis therapy and has the advantage over digitalis of being a pure principle. The oral dose given by the Pharmacopœia is 0.5 mg. but a carefully graduated and controlled dosage schedule is indicated with this drug as with Digitoxin and Digoxin to first

"digitalize" the patient and then place him on a proper maintenance dose. Sandoz Chemical Company markets this product in both tablet and ampul form as *Cedilanid*.

Liver with Stomach

This is a brownish powder resulting from mixing a concentrated aqueous extract of mammalian liver with minced fresh hog stomach tissue, incubating the mixture, drying under reduced pressure and defatting. The product is used orally in the treatment of pernicious and other macrocytic anemias and it has been demonstrated that, by the interaction of stomach tissue and liver extract, a potentiation of the anti-anemia effect is produced. Heat destroys that part of the activity not identified with the liver extract itself. The potency is expressed in terms of U. S. P. Oral Units and the preparation is used only by the oral route. Eli Lilly and Company market this product under the name *Extralin*.

Methacholine Chloride
Methacholine Chloride Capsules
Methacholine Chloride Injection

This drug is also known as acetylmethylcholine chloride. Its formula is $CH_3CO.OCH(CH_3)CH_2(CH_3)_3N.Cl$. It is a colorless or white crystalline substance or powder, odorless or nearly so, and very deliquescent. It is very soluble in water giving a neutral solution. In the body it acts as a parasympathetic stimulant similar to acetylcholine over which it has the advantage of being more prolonged in its effect. By its effect at the neuromuscular junction of the parasympathetic nerves it stimulates their contraction. It is therefore useful therapeutically in paroxysmal auricular tachycardia, for the relief of acute pain due to vasospasm in peripheral vascular disease, in the treatment of indolent and gangrenous ulcers occurring in peripheral vascular disease, and in the relief of abdominal distention and urinary retention following surgery. Methacholine is similar in its pharmacologic activity to Carbachol except the latter is more persistent in its action. Methacholine is given orally in doses of 0.2-0.5 Gm., by subcutaneous injection using 10-40 mg., and by iontophoresis where its local effect is desired. Merck and Company market Methacholine under the proprietary name *Mecholyl*.

Methylparaben

Methylparaben chemically is methyl parahydroxybenzoate. It is a colorless, crystalline powder with a faint, characteristic odor and a slight burning taste. This, the methyl ester of parahydroxybenzoic acid, together with the propyl, butyl and other esters are widely used as preservatives in pharmaceuticals. It is superior to sodium benzoate but like the latter has certain limitations. The concentration needed varies with the product in which it is employed. Thus 0.05-0.5 per cent is used. The presence of oils, e. g. in emulsions, makes a higher concentration necessary than would be needed in a simple aqueous solution. This is due to the partition coefficient favoring the oil phase. Combinations of two esters, e. g. the methyl and propyl, are more effective as preservatives than either one alone. The Pharmacopœia uses both Methylparaben and Propylparaben (also U. S. P. XIII) in Hydrophilic Ointment as preservatives. Methylparaben is sold under a variety of trade names including *Tegosept M*, Goldschmidt Chemical Corporation and *Methyl Parasept*, Heyden Chemical Company.

Methyltestosterone
Methyltestosterone Tablets

Methyltestosterone is a white or slightly yellow crystalline substance or powder. Testosterone, the male sex hormone, is poorly absorbed when given orally but the methyl derivative is effective by mouth, sublingually, or by inunction. It is used in those cases where androgen deficiency exists and stimulation therapy is ineffective or inadequate. It is also employed to combat excessive estrogen or to suppress excessive pituitary activity in females. In clinical practice considerable success has followed its use in males for hypogonadism, involutional melancholia and hypertrophy of the prostate. In females it is useful in treating those conditions associated with excessive estrogen and in the control of excessive lactation.

Methyltestosterone in tablet form is given in doses of 10 mg. three to five times daily. Sublingually, the dose is 5 mg. It is sold under a variety of proprietary names including *Oreton M Tablets*—Schering Corporation, *Neo-Hombreol M Tablets*—Roche Organon, and *Metandren Tablets*—Ciba Pharmaceutical Specialties Company.

Morphine Injection

This is simply a new dosage form for morphine in the Pharmacopœia. The morphine salt to be employed in preparing the injection is not specified but the one used must be stated on the label. It is, of course, a sterile solution prepared with water for injection. The average dose of morphine when injected is 10 mg.

Nicotinamide Injection

This is a new dosage form of nicotinamide which itself was recognized in the U. S. P. XII. It is a sterile solution of nicotinamide in water for injection. Nicotinamide, also known as niacinamide, is one of the vitamin B-complex factors. It is preferred by most clinicians for injection rather than nicotinic acid since it produces less side-reactions, such as flushing. It is used in treating pellagra and other B-complex deficiency states either alone or in conjunction with the other B factors, e. g. riboflavin and thiamine. The average dose of nicotinamide parenterally is 100 mg.

Papaverine Hydrochloride
Papaverine Hydrochloride Injection

Papaverine is an alkaloid obtained from opium and also prepared synthetically. It was official in the Seventh Edition of the National Formulary but it was judged to be of sufficient therapeutic worth to gain recognition in the new Pharmacopœia. Papaverine Hydrochloride is a white crystalline substance and soluble in water. It is a non-narcotic alkaloid producing neither sleep nor analgesia. It relaxes smooth muscles of the body such as the bronchi, the intestine, the ureters and the blood vessels, although not all are equally affected. Papaverine is used in the treatment of gastric and intestinal spasm, in biliary colic and bronchial spasm. Many practitioners consider it useful in angina pectoris and in the treatment of peripheral or pulmonary embolism. In the case of embolism, circulation is increased collaterally in a vascular bed which otherwise would be constricted by reflex action.

The average dose of Papaverine Hydrochloride both orally and intravenously is 0.1 Gm.

Peanut Oil (Arachis Oil)

This is a fixed oil obtained by cold expression from the peeled seeds of cultivated varieties of *Arachis hypogœa*. It is pale yellow in color, with a bland nutty taste.

Peanut oil is recognized as a vehicle for drugs to be administered in oil solution or suspension by intramuscular injection. Thus it is employed as the vehicle for Penicillin Injection in Oil and Wax. Peanut Oil and Sesame Oil are the two oils best suited for intramuscular injection.

Penicillin Calcium

This is the calcium salt of the antibiotic substance or substances produced by the growth of *Penicillium notatum* Westling or of *Penicillium chrysogenum* Thom.

It is a white to brown powder, granules or scales and it has a

slight characteristic odor. When highly purified it does not absorb moisture appreciably but most samples are somewhat hygroscopic. Penicillin Calcium is fairly stable when dry but in solution it deteriorates rapidly, the rate depending upon the temperature. Acids, oxidizing agents and heavy metals inactivate it.

The strength of Penicillin Calcium in terms of units/mg. is variable, ranging from 300 to over 1000 units/mg. (The unit is the activity contained in 0.6 microgram of the Penicillin Master Standard which in turn is practically identical with the International Standard.)

Penicillin Calcium is the form of penicillin preferred for the preparation of dosage forms such as tablets, ointments, troches, etc. It may also be used in solution for intramuscular injection.

Penicillin Sodium

The sodium salt of penicillin is quite analogous to the calcium salt except that it is considered to be less suitable for use in the manufacture of dosage forms. Commercial samples are usually more hygroscopic than the calcium salt. Penicillin Sodium is used chiefly for intramuscular injection.

Penicillin Dental Cones

These are composed of penicillin calcium with the necessary diluents, binders and lubricants. Sulfanilamide and/or sulfathiazole, are also permitted to be included. The cones usually contain 1000 or 5000 units each of penicillin and when sulfanilamide is added it is used in an amount of 30 mg. or 60 mg. for each cone.

Penicillin Dental Cones are used in the treatment of socket infections following extraction, being inserted by the dentist into the socket cavity.

Penicillin Injection in Oil and Wax

Based on an original formula described by Romansky, this is a sterile suspension of Penicillin Calcium in a menstruum of peanut oil or sesame oil, in which white wax is dispersed. Marketed products contain either 100,000, 200,000 or 300,000 units of penicillin per cc. This product when injected intramuscularly provides a depot from which penicillin is gradually released thus eliminating the necessity of frequent injections. An injection of 300,000 units of penicillin in this form provides effective blood levels for twenty-four hours, although for severe infections two such injections each day, twelve hours apart, may be needed.

Injection is made using a dry, warm syringe fitted with an 18-gage needle, the ampul being warmed to body temperature before withdrawing the dose. The site of injection usually chosen is the upper outer quadrant of the buttocks. It is important that the plunger of the syringe be drawn back slightly to make sure the needle is not in a blood vessel since injection into a vein is dangerous.

A number of companies supply this product, some in a disposable type of syringe or syringe cartridge as a convenience to the physician.

Penicillin Injection in Oil and Wax is sold under the proprietary name *Delacillin* by E. R. Squibb and Sons.

Penicillin Ointment

Penicillin Ointment contains Penicillin Calcium in a suitable ointment base. The usual strengths marketed contain 1000 units per Gm. At the present time anhydrous bases are used for Penicillin Ointment since the absence of water prolongs the "shelf life." Experiments have shown, however, that the diffusion of penicillin from anhydrous bases into an aqueous medium is poor compared with that from ointments containing water. From these experiments one might conclude that emulsion bases are better vehicles for penicillin in ointment form than the anhydrous bases if one is more interested in effectiveness than prolonged stability.

Penicillin Ointment should be stored at a temperature not exceeding 15° C.

Proprietary names for penicillin ointment include: *Topicillin Ointment*, E. R. Squibb and Sons, and *Ledercillin-G Ointment*, Lederle Laboratories, Inc.

Penicillin Tablets

These contain Penicillin Calcium or Penicillin Sodium with some buffer such as calcium carbonate, sodium citrate or aluminum hydroxide. The strength of the tablets as now marketed is 50,000 units each. The tablets must be stored in hermetically sealed or tight containers at a temperature not exceeding 15° C.

The oral use of penicillin is not as reliable as parenteral injection since one cannot predict with certainty the amount that will be destroyed or inactivated in the gastrointestinal tract. Gastric acidity is responsible for the major amount of that destroyed and thus the use of buffers in an effort to reduce gastric acidity. Since the free acidity of the stomach is at a minimum during its resting period, penicillin should be given orally as far from feeding time as possible. When given on a fasting stomach even better results may be expected. Generally speaking, about five times as much penicillin must be given orally as intramuscularly to achieve the same blood levels. Some physicians resort to oral penicillin therapy after the initial emergency of infection has been controlled by parenteral administration. Penicillin Tablets should be given every 3-4 hours with a daily dose (24 hours) of at least 300,000 units.

Proprietary names for Penicillin Tablets include the following: *Penioral Tablets*, Wyeth, Inc.; *Per-Os-Cillin*, Hoffmann-LaRoche; *Ledercillin G Tablets*, Lederle Laboratories, Inc.; and *Gelu-Cillin*, William R. Warner and Company.

Penicillin Troches

These contain either Penicillin Calcium or Penicillin Sodium in a suitable base. Two types of troches are prepared. One is made using some soluble vehicle such as gelatin, agar or sugars. The second type is known as a "chewing troche" and its base is composed of wax. In the soluble type of troche or pastille the troche usually contains 1000 units of penicillin and it is allowed to dissolve slowly in the mouth, providing a release of penicillin for an effect in the mouth and throat. The chewing troche contains 20,000 units and it is chewed over a period of several hours like chewing gum. During this time it slowly releases penicillin.

In the case of the soluble type of troche the situation is similar to that described with ointments. The tendency is to prepare an anhydrous product in the interest of stability. Clinical reports, however, seem to favor the extemporaneous type prepared with gelatin since these, although stable only about one month, do not produce stomatitis. This soreness of the mouth is an occasional complaint of patients using troches made with certain gums and sugars in the anhydrous form.

Penicillin Troches of both types are quite useful in combatting mouth and throat infections due to penicillin-susceptible organisms, notably Vincent's angina.

Proprietary names for penicillin troches are:

Soluble Type: *Pen-Troches*, Cutter Laboratories; *Bucillin*, Wyeth, Inc.

Chewing Troches: *Topicillin Chewing Troches*, E. R. Squibb and Sons.

Plague Vaccine

This is a sterile suspension of killed plague bacilli (*Pasteurella pestis*), of a strain selected for high antigenic efficiency, in isotonic sodium chloride solution or other suitable diluent. Each cc. contains at least 2,000 million organisms. Plague, also known as bubonic

plague, is transmitted by the bite of a flea which has become infected by feeding on rodents. The pneumonic form is transmitted from person to person by the inhalation of air contaminated by coughing. The vaccine is used hypodermically for active immunization. The dose is 0.5 cc. followed in 7-10 days with 1 cc., the latter dose repeated once.

Progesterone

This is a synthetic substance possessing the physiological effect of the corpus luteum hormone or progestin. It is a white crystalline powder, stable in air, insoluble in water but somewhat soluble in oils.

For the therapeutic uses of Progesterone see under *Anhydrohydroxyprogesterone* which is an orally active form. Progesterone itself is employed in oil solution by intramuscular injection. The dose is 5 mg. It is sold under the following proprietary names:

Proluton in Oil—Schering Corp.
Progestin in Oil—Roche-Organon.
Progestin in Oil—Abbott Laboratories.
Lutocylin in Oil—Ciba Pharmaceutical Specialties Co.
Nalutron in Oil—Winthrop Chemical Co.
Lutromone in Oil—Endo Products, Inc.
Lipo-Lutin—Parke Davis & Co.

Propylparaben

Propylparaben is propyl parahydroxybenzoate and it is used as a preservative for certain pharmaceutical preparations. These compounds were discussed under *Methylparaben,* the methyl ester.

Propylparaben is sold under a number of proprietary names including *Tegosept P,* Goldschmidt Chemical Corporation, and *Propyl Parasept,* Heyden Chemical Company.

Riboflavin Injection

Riboflavin Injection is a sterile solution of riboflavin in water for injection. It may contain nicotinamide, urea or other suitable harmless solubilizing agents to increase the solubility of the riboflavin. Riboflavin is extremely sensitive to light and thus it must be stored in light-resistant containers. It is employed in those deficiency states attributable to a riboflavin shortage in the diet. Riboflavin is one of the B-complex factors essential in human nutrition. The minimum daily requirement is estimated to be 2 mg. but when used therapeutically much larger doses may be given.

Ringer's Solution, Lactated

This sterile solution, prepared in water for injection, contains in each 100 cc. the following:

18-22 mg. $CaCl_2.2H_2O$
27-33 mg. KCl
570-630 mg. NaCl
290-330 mg. $NaC_3H_5O_3$ (Sodium Lactate)

Lactated Ringer's Solution is used in much the same way as Isotonic Sodium Chloride Solution or Ringer's Solution for parenteral injection to correct dehydration and temporarily to replace circulating blood volume. It is superior to these other solutions in certain types of acidosis, inasmuch as the sodium lactate helps to maintain the buffer action of the blood.

The Pharmacopœia also permits the use of a concentrate to prepare this solution by dilution. A number of companies supply the solution under the name *Lactate Ringer's Solution.*

Sesame Oil

This is the fixed oil obtained from the seed of *Sesamum indicum.* It is a pale yellow liquid, almost odorless and has a bland taste. Sesame Oil is recognized officially as an oil suitable for use in preparing oleaginous intramuscular injections. It is, for example, specified with peanut oil as satisfactory for the preparation of *Penicillin Injection in Oil and Wax.*

Sodium Ascorbate Injection

This is a sterile solution of Sodium Ascorbate in water for injection. It is used by injection in those cases requiring vitamin C (ascorbic acid) therapy and is preferable to ascorbic acid for parenteral use. The average daily dose, calculated as ascorbic acid, is 0.1 Gm.

Sodium Lactate Injection

This is a sterile solution of sodium lactate ($NaC_3H_5O_3$) in water for injection. The usual strength prepared in 1.87 per cent or one-sixth molar since this concentration is isotonic with the blood. It is used in the treatment of acidosis either alone or in the form of Lactated Ringer's Solution. It is also employed in alkalinizing the urine, as for example in the use of sulfonamides in the treatment of acute infections of the urinary tract.

Sodium Lactate Injection is used either subcutaneously or intravenously. When given intravenously it should not be given at a rate greater than 300 cc. per hour. A number of companies sell this product as *Sodium r-Lactate One-Sixth Molar in Distilled Water.*

Sodium Lauryl Sulfate

This is defined officially as a mixture of sodium alkyl sulfates, consisting chiefly of sodium lauryl sulfate $CH_3(CH_2)_{10}CH_2OSO_3Na$. It is a white or light yellow crystalline material having a slight characteristic odor. It is soluble in water, giving an opalescent solution. This substance is widely used as a wetting agent. It is effective in neutral, slightly acid or alkaline solution and it belongs to that group known as anionic wetting agents. Sodium Lauryl Sulfate is superior to soap since it does not require a strongly alkaline medium and it is less sensitive to calcium and magnesium salts. The U. S. P. XIII recognizes this substance as an ingredient of Hydrophilic Ointment which is an official form of what is commonly described as a "washable ointment base," being easily removed with water.

Sodium Lauryl Sulfate is used in "soapless" shampoos, liquid dentifrices and brushless shaving creams and it is known under certain technical trade names in the detergent field.

Sodium Morrhuate Injection

This is a sterile solution of the sodium salts of the fatty acids of cod liver oil. A suitable preservative (not to exceed 0.5 per cent) and ethyl or benzyl alcohol (not to exceed 3 per cent) may be added. Sodium Morrhuate is generally used in a concentration of 5 per cent as a sclerosing solution for the obliteration of varicose veins. Precautions must be taken to test the patient against undue reaction to the drug and in establishing proper dosage and frequency of injections. A number of companies sell this product under its official title.

Stearyl Alcohol

This product is recognized since it is used in making Hydrophilic Ointment and Hydrophilic Petrolatum. It is a mixture of solid alcohols consisting chiefly of $CH_3(CH_2)_{16}CH_2OH$. Stearyl Alcohol is a white unctuous flaky or granular solid. Like cetyl alcohol (its lower homologue), Stearyl Alcohol confers on ointments and creams a smoothness of texture and a capacity for water as exemplified in the new product Hydrophilic Ointment U. S. P. XIII which contains 2.5 per cent of this alcohol. *Stenol* is a proprietary name for stearyl alcohol.

Sulfamerazine
Sulfamerazine Tablets
Sulfamerazine Sodium
Sulfamerazine Sodium, Sterile

Sulfamerazine chemically is *p*-amino-N-2-(4-methylpyrimidyl) benzenesulfonamide. It is closely related to sulfadiazine being its methyl derivative, i. e. sulfamethyldiazine. Physically it is a white or faintly yellow crystalline substance or powder and rather insoluble in water. Sulfamerazine slowly darkens on exposure to light. This compound is much more rapidly absorbed from the gastrointestinal tract than sulfadiazine and it is also much more slowly excreted. As a result, it need be given less frequently in order to maintain effective blood levels. Sulfamerazine penetrates into the cerebrospinal, pleural and peritoneal fluids and its concentration is usually about one-half that in the blood. Sulfamerazine in its acetylated form is more soluble in urine at pH 7 than sulfadiazine, and free sulfamerazine is more soluble than sulfadiazine in urine at any pH. As a consequence, renal toxicity is less likely with sulfamerazine than with sulfadiazine.

Sulfamerazine is used in the treatment of various coccic infections, e. g. pneumococcal, streptococcal, meningococcal and gonococcal. The dosage orally varies with age and body weight but the average adult dose is 3-4 Gm. initially followed by 1 Gm. every eight hours. Blood concentrations to be effective should be between 10 and 15 mg./100 cc.

For intravenous use the Sterile Sulfamerazine Sodium is employed. This is packaged as a rule in a dry ampul since the aqueous solution is unstable.

Suramin Sodium

This is also known as Naphuride and Bayer 205. It is a white or slightly pink, water-soluble powder which is both hygroscopic and affected by light. The compound is used by intravenous injection, usually dissolved in normal saline solution, in trypanosomiasis. It is particularly useful in African Sleeping Sickness as a prophylactic. Some toxic effects have been noted, especially on the kidney, and its administration to patients with renal insufficiency and albuminuria requires great caution. It is given intravenously in initial doses of 0.5 Gm. followed by 1.0 Gm. every other day for four doses. The powder should be sprinkled on water to prevent clumping. Suramin Sodium is sold by the Winthrop Chemical Company as *Naphuride Sodium*. It is also known as *Fourneau 309, Germanin, Nagonol* and *Moranyl*.

Surgical Sutures

This monograph covers those sutures *not* made of silk or the intestinal fibers of sheep since these are recognized as Surgical Silk and Surgical Gut respectively. Surgical Sutures are prepared from some suitable organic substance or metal and appropriate tests are given for their tensile strength, sterility, etc.

Testosterone Propionate

This is the propionic ester of testosterone which is used by intramuscular injection in oil solution. It is a white or slightly yellow crystalline powder stable in air. The average dose is 25 mg. It is sold in oil solution for injection under the following proprietary names:

Neo-Hombreol—Roche-Organon.

Oreton—Schering Corporation.

Perandren—Ciba Pharmaceutical Specialties Co.

Generally speaking, the intramuscular injection of testosterone in oil produces more reliable results than the oral use of methyltestosterone. Therapy may be best intiated by the injection route and then methyltestosterone, if desired, used to maintain therapy. For the clinical applications of androgen therapy see *Methyltestosterone*.

Tetanus and Gas Gangrene Antitoxins

This is a sterile solution of the antitoxic substances obtained from the blood of healthy animals which have been immunized against the toxins of *Cl. tetani, Cl. perfringens* and *Cl. septicum*. Each package (one minimum dose) contains not less than 1500 units of tetanus antitoxin and not less than 2000 units each of the other two. It is used as a prophylactic where contaminated wounds make either tetanus, gas gangrene or both infections a hazard.

Thiamine Hydrochloride Injection

This is a new official dosage form for thiamine or vitamin B_1. The dose is not specified since it is given by physicians in a wide range of dosage in accordance with their estimate of the patient's need. Thiamine is used not only in deficiency states but also as a drug in the treatment of certain other diseases. The use of thiamine in the latter is still somewhat experimental.

Thiopental Sodium
Thiopental Sodium, Sterile

Chemically this is sodium 5-ethyl-5(1-methylbutyl)-thiobarbiturate. Thiopental Sodium is a thiobarbiturate the formula of which is identical with that of Pentobarbital Sodium except that a sulfur replaces oxygen in the urea residue of its structure. It is a yellowish-white, hygroscopic powder with a disagreeable odor and an alkaline reaction.

The thiobarbiturates are very rapid in their effect and they are used intravenously for anesthesia. Sterile Thiopental Sodium is mixed with anhydrous sodium carbonate as a buffer and as such it is packaged in a dry ampul to be dissolved just prior to injection. It is useful only for operations of short duration and only those trained in its use should attempt the technique. Thiopental Sodium is sold by Abbott Laboratories as *Pentothal Sodium*.

Triethanolamine

This is a mixture consisting largely of triethanolamine $N(C_2H_4OH)_3$ with varying amounts of diethanolamine $NH(C_2H_4OH)_2$ and monoethanolamine $NH_2(C_2H_4OH)$. It is a colorless to pale yellow, viscous, hygroscopic liquid having a slight ammoniacal odor. It is completely miscible with water, giving an alkaline reaction.

Triethanolamine is used with fatty acids, such as oleic, to form soaps. These are excellent emulsifying agents and are superior to the alkali metal soaps in being less alkaline and irritating. Triethanolamine oleate is used as the emulsifying agent in Benzyl Benzoate Lotion U. S. P. XIII and in preparing the concentrate, Saponated Benzyl Benzoate.

Tuberculin, Purified Protein Derivative of

This, sometimes abbreviated as Tuberculin P. P. D., is a sterile soluble product of the growth of tubercle bacilli (*M. tuberculosis*) prepared in a special liquid medium free from protein.

It is an amorphous powder, soluble in water and usually supplied with suitable diluent in tablet form. This material is employed as a diagnostic aid in the tuberculin test for tuberculosis. Two strengths of the tablet are available; one containing 0.00002 mg. and the other 0.005 mg. A solution is prepared with the tablet just prior to its use. The test is an intradermal one, the stronger tablet being employed only if the weaker gives no response. A positive reaction is indicative of a focus but not necessarily active tuberculosis.

Typhus Vaccine, Epidemic

This vaccine is a sterile suspension of the killed rickettsial organism of a strain or strains of epidemic typhus rickettsiæ selected for antigenic efficiency. The organisms are cultured in the yolk sack membrane of chick embryos. This product is used for active immunization against epidemic typhus. The dose is 1.0 cc. hypo-

dermically, repeated once or twice at 7-10 day intervals. A booster dose every six months should be used if continuing danger of infection is present. The product should be stored between 2° and 10° C.

Vinyl Ether

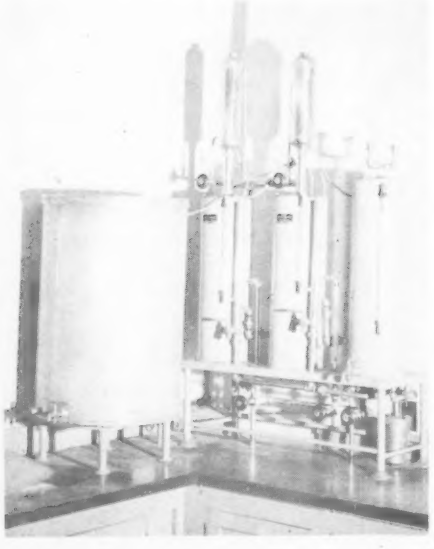
Chemically, Vinyl Ether is divinyl oxide CH_2:CH.O.CH:CH_2. The U. S. P. product contains about 4 per cent of dehydrated alcohol and 0.025 per cent of a preservative (phenyl-α-naphthylamine) is permitted. The dehydrated alcohol prevents its freezing on evaporation and the preservative its polymerization and decomposition. It is a clear liquid with a characteristic odor. The containers in which it is stored must not exceed 200 cc. in capacity and it must not be used if the original container has been opened longer than forty-eight hours.

Vinyl Ether is used as an inhalation anesthetic for short anesthesias. It is very rapid in its action and recovery is likewise rapid. Care must be taken, however, in its use not to go beyond surgical anesthesia into dangerous overdosage. For any but the shortest of procedures, continuous administration is necessary in order to maintain anesthesia. The open drop method of administration is probably the best method for using it. Merck and Company supply Vinyl Ether for anesthesia as *Vinethene*.

Yellow Fever Vaccine

This vaccine is a living culture of an attenuated strain of yellow fever virus selected for high antigenic activity and safety. It is prepared by culturing the virus in chick embryos. The product is dried in ampuls from the frozen state and the ampuls nitrogen-filled before sealing. The vaccine is rehydrated before being used and the dose of the redissolved product is 0.5 cc. subcutaneously for active immunization.

The vaccine must be stored in the dry condition in the unopened container preferably below c° C. and never above 5° C.



storage tank for DISTILLED water

By M. J. GRIFFITH AND D. L. FERGUSON,
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The accompanying photograph shows our distilled water apparatus, but the real occasion for the picture is the large storage tank shown. It is a recent addition to the still, and has solved for us a most vexing problem - supplying enough distilled water for the hospital wards to keep the sterilizers for syringes, needles and instruments in the nurses offices in almost continual operation due to increasing parenteral therapy. The hardness of the tap water in this vicinity precludes its use for this purpose because of heavy scale formation.

The still is of the conventional type, using superheated steam as the heat source. It is designed to produce both single and double distilled water and to sterilize the latter. Storage capacity up to now has been the inadequacy of the still. Holding only about four gallons, considerable attention was required to prevent loss through the overflow outlet. The large tank saves time, water and space.

Construction is of stainless steel, tin lined where essential. It was built at a cost of about $25.00, not considering the labor which was done by our own Utility Department. The dimensions are 36" x 22" and the capacity about 43 gallons. The delivery line to the tank cuts into the still in such a way that it can be shut off when sterile or plain double distilled water is required. Water softeners were considered but the cost of their maintenance and their lower efficiency made the large storage tank the obvious choice and it has more than met our expectations. The photograph is by Associate Pharmacist D. L. Ferguson.

A SCHEMA FOR HOSPITAL PHARMACY INTERNSHIPS*

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THE NEW YORK HOSPITAL

THE FIRST OF A SERIES OF PAPERS DISCUSSING THE SUBJECT OF INTERNSHIPS IN HOSPITAL PHARMACY

The apothecary of earlier years has all but vanished from today's communities. The complexion of the Profession of Pharmacy has been changing radically during the past decade. The unadultured practice of Pharmacy is centering more prominently in institutional work now as each year passes. There is evident an acute need for pharmacists who have been trained fundamentally into the pattern of hospital pharmacy. It is an honest desire for the preservation of true professional activity that we wish to express in outlining and advocating a program for internships in hospital pharmacy, the subject of this discussion. In addition, it is our wish to familiarize more hospitals with the underlying principles of the program and to place in the hands of hospital pharmacists a basic outline and details for the operation of a plan designed to be useful in institutions where good training facilities are available but where the university affiliation is not available.

There is apparent today a trend for which provision must be made by the Profession. The trend has many contributing factors. A major result, however, is the demand for hospital trained pharmacists. The situation becomes more acute as Pharmacy fails to meet the demand. The sick and indigent of our communities are being cared for with greater frequency and more comprehensively in hospitals, or similar institutions, as a result of social legislation, hospitalization or comprehensive medical care plans, the strengthening of labor movements, long range Public Health programs and the aggressive entry of the Federal Government into the provision of unquestionably excellent care for those whose health has been impaired incident to military service.

Indeed, private medicine is rapidly joining the movement with its participation in health insurance plans, diagnostic clinics and the establishment of small, private medical centers. Many medical practitioners have found it a wise and beneficial move to group their specializations, combine their abilities into one working unit, and join in a cooperative movement to provide for their patients the best advice, care and treatment possible by means of their pooled knowledge and facilities.

These groups are taking over, or constructing, convenient buildings and converting them into private, miniature medical centers, accessive to the average patient who does not require actual hospitalization. These medical men are finding it necessary and desirable to have within the structure of their organization a pharmacy equipped to supply them with all the necessary office medical and surgical supplies and to compound the prescriptions they write for their patients in the fashion they wish. Because of the prevalent atmosphere, one of hospital routine and procedure, pharmacists are needed who possess a definitive hospital background.

In fact, all of these developments - the increase in hospital care for members of the community, expansion of the Public Health services, enlargement of hospital facilities for veterans, grouping of private practitioners into miniature medical centers - are calling for pharmacists who are trained in basic hospital procedures. This, then, represents a challenge to the Profession of Pharmacy; it is a challenge to pharmacy educators; and, most of all, it is a challenge to the specialization of hospital pharmacy - a challenge which must be met.

Hospital pharmacy internships are designed to take the young student before his mental processes have become crystallized, to teach him the routine and scope of hospital practice and, with this training and background, allow him to proceed in the work of a hospital pharmacist. With this total program behind him, we know that his per-

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spective will develop along the best possible channels and he will go forth to better his community by thoroughly understanding the work his choice of career has dictated.

The scope of the internship program may be defined by the following objectives. Primarily, the program seeks to mold the young mind into the full role of the hospital pharmacist. This includes familiarity with the routines of hospital pharmacy, the problems, the exigencies, the responsibilities to the community, the clear-cut service aspect, the intangible hospital atmosphere - an intermingling of the acedemic, inquisitive approach with the staid routine; the alertness to improve existing procedures; the constant change incident to perpetual improvement; the unending struggle to cure illness; the aura of satisfaction from accomplishment, the discouragement of failure. Yes, and even the multiform politics of institutional life.

It is of fundamental importance to produce excellent pharmaceutical technicians; to develop in these people a working concept of research and a second nature ability to grasp the thinking behind the clinicians' approach to therapy. In short, the purpose of an internship is to produce good pharmacists capable of meeting with their heads and their hands the present and future requirements for their services with the other allied medical sciences.

For the inauguration of an internship training program, the need for the prerequisites outlined by Mr. Godley is absolute. The institution must qualify by possessing, inherently, an acceptable approach to an academic program of this nature. There must be a department of pharmacy possessing adequate facilities with which to perform modern pharmaceutical technics as well as the execution of all details at peak efficiency. A chief pharmacist and a staff must be available possessing full knowledge and ability of the performance of all departmental functions.

Selection of prospective interns is an important function. It is to be recommended that a Formulary Committee (or similar body) be established to determine policies for the department of pharmacy with the ultimate purpose being the coordination of the pertinent needs, desires and activities of all parties concerned with the medical management of patients. From such a group could be selected a sub-committee to make recommendations for appointment of an intern to the governing body of the hospital. This sub-committee, at the appropriate time, would go over all the information which must be gathered concerning an applicant. The chief pharmacist should act as secretary of this Committee on Interns and should be responsible for collecting the necessary data. The applicant would be judged on the basis of a set of predetermined standards designed to fit local conditions and possessing a degree of flexibility found practical by the committee.

At present, one of the most dependable criteria, but by no means the most accurate, would be the individual's academic rating from his college, and the scope and variety of studies in which he has engaged. Other elements to be considered would be the appearance of the applicant and estimates and evaluations of professional potential and character as reported by contacts and references.

Application blanks should be designed to obtain as much pertinent information regarding the applicant as possible. A recent photograph will serve to give an impression of general appearance. After the information obtained by the application is thoroughly analyzed and, if the applicant is believed to show promise, a transcript should be obtained from his college. Likewise, a letter should be requested from the applicant's dean presenting an overall character analysis as based on academic application and achievement and an estimate concerning the individual's potentialities in hospital pharmacy. If, upon receipt of this information, the applicant meets, within reason, a predetermined academic rating, the committee on interns should request a personal interview. On this occasion, the committee can make its own evaluation by questioning the applicant and conducting a conversation designed to bring out certain desirable attributes if present. Subsequently, if the committee is favorably impressed, a physical examination should be given and the appointment made and confirmed.

The following qualifications and pre-requisites might be established as a guide. Divergence from these standards would be at the discretion of the committee on interns when considering individual cases.

I The personal qualifications of an applicant shall be:
   1. Good general character and appearance.
   2. Ability to pass a physical examination given to all personnel of the hospital, with special consideration for the activities in which he will be engaged.
   3. Presentation of three satisfactory recommendations from individuals, other than applicant's family or the faculty of any school attended. These reference must be fully investigated.

II The academic qualifications of an applicant shall be:
   1. A general academic rating of "above average."
   2. Rating in subjects reflecting pharma-

ceutical technical ability "above average."

3. At this time, the applicant should be graduated from an accepted College of Pharmacy. He should have completed at least a four year course of study leading to a Bachelor of Science degree in Pharmacy.
4. He should present a satisfactory letter of reference, bearing directly on his academic work, from his dean and at least one other college professor.
5. He should have pursued a course of elective study which indicates an interest in hospital pharmacy procedures.

For the purpose of organizing an internship training procedure, it is desirable to sub-divide a department into at least four major divisions. This sub-division is mainly one of function and is not necessarily dependent upon the existence of physical division. The resulting sub-divisions constitute areas of thinking and embrace problems inherent to each in the main and not common to all. It is desirable to have an intern devote his time for a specified period dealing, mentally and physically, with the problems of each area exclusively. This process is culminated by an integration procedure which is designed to result in a broad perspective of the total department as a unit made up of component parts. The divisions desirable follow in order:

I	Out-Patient Dispensary	(3 months)
II	General Dispensing Laboratory	(3 months)
III	Manufacturing Laboratories	(4 months)
IV	Administration	(2 months)

It has become evident that to complete an ambitious training program requires at least one year. Depending upon the extent of departmental functions, such a program may advantageously be extended to two years. After each division noted above has been placed a number of months for service in that division. The ratio may be carried into a two year program in a similar fashion. It is desirable to rotate an intern through the department in the order given.

A brief period of indoctrination is desirable during which a study is made of departmental organization. This period of about 2 weeks duration is a familiarizing function and may be deducted from time assigned to administrative studies.

THE OUT-PATIENT DISPENSARY: An intern should work in such a unit and study problems associated with this division, such as:

a. Handling patients (essentially, public relations).
b. Application of the Formulary System.
c. Advance preparation of galenicals, a comparison of inherent problems and benefits of this procedure with extemporaneous compounding.
d. Packaging and labeling problems.
e. A thorough study of comprehensive medical care programs and the medical supplies required.
f. Prescription writing practices employed by clinical staff (a critical analysis).
g. The problem of the extemporaneous prescription in a busy out-patient dispensary.
h. Storage problems (concerning, particularly, dispensable supplies both in the dispensary unit and in more comprehensive storage sections. The physical aspects of orderly, clean storage as well as problems of decomposition, etc.)
i. Application of prescription costing methods. (A study of the background of various procedures, not necessarily limited to those methods employed in the intern's hospital.)
j. Dealing with indigent patients, welfare agencies and social service workers.
k. Trend analysis as applied to therapy, types of illnesses, economic levels of patient census, etc.
l. Accounting control methods; the use of inventory control; the use of a cash machine or a cashier.
m. Legal significance of the prescription and legal aspects encountered with prescriptions.

THE GENERAL DISPENSING LABORATORY: Here, again, an intern should participate actively in the work involved and study the problems characteristic of the division, such as:

a. Application of the Formulary System.
b. Advance preparation of medical agents and the problems of packaging, labels, storage, stability of agents, etc.
c. Requisition systems and/or modifications.
d. Methods for distributing medical supplies from the department to the hospital units.
e. Inspection of supplies previously extended to nursing units.
f. The private patient order. Methods for acquiring non-inventory supplies, compounding, labeling, filing of orders, pricing.
g. Extemporaneous compounding - for nursing floors, laboratories and private patients.
h. The actual implements of narcotic control.
i. Seasonal demands and resulting fluctuations of basic stocks of galenicals and chemicals.
j. Telephone - its intelligent use, integrated with the idea of the pharmacy as a service department.

k. Conduct while contacting other professional personnel.
l. Familiarity with background, use and scope of every medical agent in dispensable stock.

The MANUFACTURING LABORATORY: Obviously, the intern should become adept at the technical work of manufacturing pharmacy. This experience should extend into every specialized sub-division of the manufacturing unit such as sterile supplies, tableting, allergin manufacture, etc. The intern should become proficient with all manufacturing routines and the reasons for established procedures should become his general knowledge. In addition, particular emphasis should be placed on such problems as the following:

a. Physical arrangement of the manufacturing units and the reasons for such an arrangement.
b. A complete understanding of the equipment employed, its construction and operation. To facilitate this study, all specialized equipment should be dismantled and sketched by the intern with notations concerning the functions of each part. The uses for the equipment and its limitations should be known.
c. Stock and storage problems.
d. Arrangement of stock.
e. The problems of bulk manufacture.
f. Planned manufacturing activities; the integration of these activities with demand, both current and future. The use of annual reports, manufacturing records and other data to obtain balanced activities on a yearly plan.
g. Methods for filling dispensable containers and the problems of handling (i.e., moving, assembling, etc.) small and bulk containers.
h. Control procedures, from processing through bottling or packaging to storage and ultimate dispensing.
i. Maintenance of manufacturing records.
j. Formulation.
k. Chemical and biological assay where necessary.
l. Inspection and labeling.
m. Cleanliness.
n. Safety factors - how to lift and move heavy objects; an awareness of explosive properties and how to manage fires resulting from different agents; how, generally, to become accident conscious.

ADMINISTRATIVE:

a. Total organization and integration of the three previous divisions.
b. Personnel evaluation and selection.
c. Supervision of personnel, theory and application.
d. Legal aspects - Federal, State and local laws.
e. Formulary (Therapeutics) Committee functions and applications.
f. Purchasing procedures - problems of supply and demand, both internal and external factors.
g. Accounting procedures.
h. Inventory control - including planning for, preparation of and use of physical inventories.
i. Fundamentals and execution of narcotic control and alcohol use.
j. Filing of prescriptions and/or other records.
k. The procedure of monthly and annual reporting of departmental activities.
l. The need for making responsible decisions, a feature accomplished in large measure by on-call service for the department. Under such circumstances, the intern must make his own decisions. He soon learns to react in a responsible fashion when confronted with emergencies.

In addition to the specialized activities outlined above, the intern should be required to attend staff meetings in the hospital or in other institutions where problems of medical research, medical management or therapeutics are on the agenda. The chief pharmacist should conduct regular lectures for the entire staff of the department for the purpose of reviewing constantly the pharmacology and background of drugs currently in use. This should be a required lecture for the intern. The intern should study library procedures, learn how to cover the literature rapidly and how to abstract. Perhaps most important, the intern should learn how to develop a complete bibliography on any topic. Periodically, an intern should be assigned a literature review of a group of similar agents, or one therapeutic agent, and such a review should be presented at a departmental staff meeting. Each presentation should be followed by a period of discussion, questions and criticism by the staff.

While an intern is studying a division of the department, the chief pharmacist should schedule informal discussion periods with the intern dealing specifically with the problems of that division.

The intern should keep an organized notebook, summarizing all activities and containing notes on all lectures or discussion periods, illustrations of equipment, etc.

A research problem should be planned, executed and brought to a logical conclusion during the training period by the intern. Such a problem might be selected from the many existing in any of the departmental divisions. It should, how-

ever, deal with a pertinent matter and be investigative in character. When completed, the results should be organized and presented as a paper to the departmental staff at a regular meeting. If the study has merit and is informative, it should be submitted for publication.

Considerable extra-curricular activity is indicated for the intern. He should learn the mechanics of purchasing by studying that procedure in the department as far as it goes, then should go to the purchasing department to watch the purchasing agent in action while buying chemical and medical supplies. He should observe the accounting department in action on pharmacy accounting and internal control. He should participate in the work of the bacteriology laboratories when they are performing sterility tests on pharmacy sterile supplies, etc. If a central surgical supplies unit is functioning, the intern should observe and participate in the activity of preparing clean, sterile equipment, linen, bandages, etc. If a blood bank functions separately from the department of pharmacy, the intern should observe it in action and participate in its technical work.

The intern should participate in the work of a general stores in operation. He should learn hospital equipment thoroughly and should obtain knowledge concerning what constitutes "good" supplies, what are the points to be evaluated, the values of a set of standardized supplies, how to purchase such supplies and factors concerning their storage.

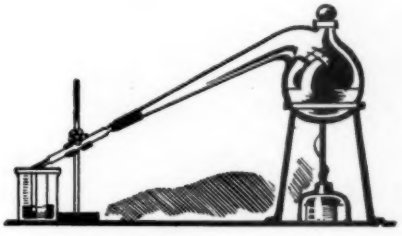
If an allergin manufacturing laboratory functions outside the pharmacy activities, the intern should participate in the work of this laboratory to learn technics and problems of processing and storage.

The intern should assist in preparation of an agenda for the Formulary Committee, should observe the committee in action and should participate in the preparation of the minutes of the meeting or the writing of opinions.

When the intern has completed his course of study, he should become registered by taking the local Board of Pharmacy examinations. Subsequently, he should become a member of the American Society of Hospital Pharmacists. The chief pharmacist should listen to a personal review by the intern of his notebook and the intern's evaluation of his course of study and experience. Finally, the governing body of the institution should award a certificate of completion of study to the intern.

Where physical facilities permit, it has been found helpful to develop an intern - resident system embracing at least a two year period of training for a resident. In such a program, from two or more interns serving a year's training period, one is selected to become a resident for one year. This year is spent concentrating intensively on administrative features. The resident also has the professional conduct of the intern staff under his supervision at all times and can prove exceedingly helpful by directing the young, inexperienced intern over the rough spots of hospital training, especially during non-assigned hours.

It is an obvious requirement that any hospital undertaking the training of young pharmacists, following any plan of approach, must plan to provide the facilities necessary to secure both physical and mental comfort and security in the form of good housing, adequate nutrition, necessary health safeguards, a pleasant environment and healthy mental stimulation.

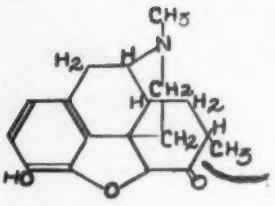


MR. EDDIE WOLFE, chief pharmacist at Mount Alto Veterans Hospital and assistant editor of THE BULLETIN attended the convention of the American Medical Association in Atlantic City, June 9-13 as a reporter for the American Society of Hospital Pharmacists.

MR. KALMAN I. PERLMAN, Assistant Chief Pharmacist of Michael Reese Hospital, will take charge of the pharmacy at the Evangelical Deaconess Hospital in Chicago.

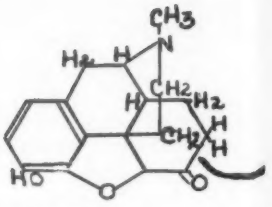
MR. PAUL F. COLE, formerly chief pharmacist at Michael Reese Hospital, Chicago, has been appointed chief pharmacist at Receiving Hospital, Detroit.

METOPON



METOPON
(Methyl Dihydromorphinone)

A NEW DERIVATIVE WITH TWICE THE ANALGESIC POTENCY OF MORPHINE IS NOW AVAILABLE FOR USE IN CANCER PAIN



DILAUDID
(Dihydromorphinone)

A new morphine derivative to be used solely in the relief of cancer pain has been released for distribution to physicians only. The new analgesic will be distributed under the supervision of the Drug Addiction Committee of the National Research Council with the cooperation of the American Cancer Society. It is available to physicians from Parke, Davis and Company and Sharp and Dohme.

Metopon is one of the many compounds resulting from a coordinated program to study drug addiction and to search for new non-addicting analgesic compounds comparable to morphine. This study was started in 1929 with funds provided by the Rockefeller Foundation and was carried on by the National Research Council through its Committee on Drug Addiction. Participating in the development of Metopon were the Universities of Virginia and Michigan, the United States Public Health Service, the Bureau of Narcotics, and the Health Department of the State of Massachusetts.

PHARMACOLOGY

Chemically metopon is methyl dihydromorphinone, or to employ a well known trade name, methyl dilaudid. Pharmacologically the drug is qualitatively similar to morphine even to properties of tolerance and addiction liability. It does, however, differ quantitatively from morphine in several respects. Its analgesic effectiveness is at least double that of morphine, while its duration of action is about the same. It appears to be nearly devoid of emetic action, an important advantage over morphine Tolerance to metopon seems to develop more slowly and to disappear more quickly; while physical dependence builds up more slowly than with morphine. Metopon produces little or no respiratory depression in therapeutic doses and causes much less mental dullness than does morphine. A significant consideration is the fact that metopon is highly effective by oral administration.

SUPPLY

Metopon is available only in capsule form for oral administration. The capsules containing 3 mg. of metopon hydrochloride are supplied in bottles of 100 by Parke, Davis and Company and Sharp and Dohme. Only physicians may order metopon. The purpose of this ruling is to maintain a rigid control over its use and to insure that the use of metopon is restricted entirely to the treatment of cancer pain. Physicians must order the drug on a regular official narcotic form which must be accompanied by a signed statement supplying information as to the number of patients to be treated and the diagnosis. No other drug can be ordered on the same narcotic form at the same time. To each physician will be sent a record card for each patient to whom metopon is to be administered. The physician must furnish this completed record of administration if he wishes to obtain an additional supply of the drug.

DOSAGE AND ADMINISTRATION

The dose of metopon hydrochloride is 6 to 9 mg. (2 or 3 capsules), to be repeated only on recurrence of pain, avoiding regular by-the-clock administration. As with morphine, it is most desirable to keep the dose at the lowest level compatible with adequate pain relief. Therefore, administration should be started with two capsules per dose, increasing to three only if the analgesic effect is insufficient.

Tolerance to any narcotic drug develops more rapidly with excessive dosage and under regular by-the-clock administration. Also, as a rule, the pain of cancer varies widely in intensity from time to time. Pain, therefore, should be the only guide to time of administration and dosage level. Tolerance to metopon hydrochloride develops slowly. It can be delayed or interrupted entirely by withholding the drug occasionally for twelve hours or for as much of that period as the incidence of pain will permit.

-Continued on page 114

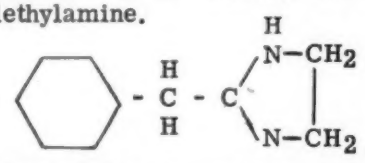
Therapeutic Trends

New Trends in Medicine and Pharmacy Include PRISCOL - METOPRYL - ISUPREL KHELLIN - DONNATAL.

PRISCOL

Priscol hydrochloride (Ciba) is believed to have potential therapeutic value as a vasodilator and sympatholytic agent. A recent report in the Journal of Pharmacology and Experimental Therapeutics shows the results of an investigation which was undertaken to study more completely the actions of priscol on the cardiovascular system and on the uterine and gastro-intestinal musculature. Most of the experiments have been carried out on laboratory animals but a few observations have been made on humans.

Chemically priscol is benzyl-imidazoline hydrochloride. It is related to histamine and phenylethylamine.



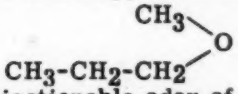
Pharmacologically, priscol exhibits complex actions. It acts primarily as a sympathomimetic agent, its chief sympathomimetic effects being: 1) peripheral vasodilation, 2) cardiac stimulation, 3) coronary vasodilation, 4) increasing cardiac output, and 5) some inhibition of gastro-intestinal musculature. Priscol also possesses some histamine-like properties, some acetylcholine-like effects and is an effective sympathomimetic anti-pressor and adrenolytic agent.

Because priscol has so many different pharmacological actions it must be used with care therapeutically. When used as a vasodilator its side actions such as cardiac stimulation, gastro-intestinal and uterine stimulation should be kept in mind. Undesirable increase in blood pressure or gastro-intestinal distress may result. Further studies on the use of priscol for humans will be necessary to determine its effectiveness as an adrenolytic agent.

METOPRYL

Recent studies by Krantz, Carr, and Kibler show that metopryl, an isomer of ethyl ether, compares favorably with ether as an anesthetic agent. Reporting in Anesthesiology (March 1947), the authors state that the anesthetic effect of metopryl is 25 per cent greater than that of ether and it produces no harmful effects on the heart, liver, or circulation.

Metopryl is a volatile colorless liquid with a boiling point of 39°C. and a pungent odor. It is eliminated probably unchanged from the body at a similar or somewhat slower rate than ethyl ether. Chemically, it is n-propyl methyl ether.



The objectionable odor of metopryl prevents its use by the open or semi-open system. As an induction agent it is less offensive to the patient than ether but it is definitely inferior to nitrous oxide, cyclopropane or vinethene. Since metopyrl is inflamable, all of the usual precautions are necessary during its use to prevent explosions.

Using metopryl in 500 surgical cases, it was found that the only advantage of this drug over ether was its decreased irritation on the respiratory tract. The relaxation afforded by metopryl did not seem to be superior to that ordinarily obtained from other agents. The analgesic properties compared favorably with those of ethyl ether. No serious complication resulted from the use of metopryl except respiratory and circulation depression, which was readily corrected by decreasing the concentration of the drug. Although the margin of safety of metopryl appeared to be good, there is no reason to believe that it was less dangerous than ether. Additional experiments with this drug will be required to

evaluate its usefulness as an anesthetic agent.

Metopryl for experimental use was supplied by the Ohio Chemical & Mfg. Co. of Cleveland.

ISUPREL

Isuprel, an analogue of epinephrine, appears to be particularly effective in treating bronchial asthma according to a preliminary report in the Bulletin of the New England Medical Center (April 1947). Known as "Aleudrin" in Europe, this drug was found to have a therapeutic action similar to that of adrenalin but it does not tend to raise the blood pressure. When used as a simple spray, Aleudrin quickly stopped the crisis of experimental dyspnea induced in healthy subjects by aerosols.

Subjective relief from bronchospasm was observed after treating a series of patients with Isuprel. Three routes of administration were employed including oxygen-aerosolization with doses of 1.0 cc. of 1:100 dilution every three hours, subcutaneous with doses of 0.20 to 0.33 cc. of 1:1000 dilution, or by the oral route with doses of 30 to 90 mg. daily (5 to 10 mg. every three to six hours). The effects of 187 inhalations in 82 ambulatory patients with chronic bronchial asthma were studied. Twenty-nine hospital patients with severe bronchial asthma were treated at length. The subcutaneous and oral routes were also employed in the latter group, but the inhalatory route was used more often than the others. When the acute attack had been successfully combated, the oral route (alone, or in conjunction with inhalations) carried the patient along. Relief was also observed in patients with coughing paroxysms free of bronchospasm.

Undesirable pressor effects and tachycardia were minimal and generally corresponded to the individual's tolerance to sympathomimetic amines. Reactions may be alarming if more than 0.5 cc. of a 1:1000 dilution is given subcutaneously. Isuprel should not be used intravenously. Sensitive patients should get inhalatory doses of 0.5 cc. of the 1:200 dilution and subcutaneous doses of 0.1 cc. of the 1:1000 dilution. These doses may be gradually increased to determine the individual tolerance.

KHELLIN

Khellin, the active principle of Amni visngna Lam., a plant which grows wild in Eastern Mediterranean countries and in Arabia is being investigated for its use as a coronary vasodilator. According to a report in Lancet (May 17, 1947), this drug has now been used in over 150 patients with "extremely encouraging" results. Single or repeated doses of 100 mg. were given intramuscularly or 50 to 100 mg. orally three times daily. Among 38 patients with angina pectoris the response was satisfactory. Eight patients with coronary thrombosis were also benefited by daily doses of khellin for 2 to 5 weeks.

A single intramuscular injection of 200 to 300 mg. of khellin resulted in "complete and prolonged relief" in 41 out of 45 patients with severe bronchial asthma. Even this high dosage had no effect upon the blood pressure. It has, moreover, relieved attacks resistant to adrenalin and aminophylline. It has not yet been determined as to whether khellin is safer than aminophylline.

It is thought that khellin acts directly on the muscle-fibers of the blood vessels and that the apparently selective response by the coronary vessels is due to their particular sensitivity.

Further trial of the drug will be carried out. Since there is some evidence that the impurities in this plant may be toxic, preparations of khellin must be purified and standardized before it comes into general use.

DONNATAL

Donnatal, a spasmolytic agent of non-narcotic character, has been used with good results in the treatment of renal and ureteral colic. Reporting in the Journal of Urology (April 1947), it is concluded that donnatal is superior to the use of atropine alone in its range of action and is also more dependable and less toxic than the synthetic preparations now being used to relieve spasm of the urinary tract.

Used in 37 cases of renal and ureteral colic due to stone, donnatal was found a most effective therapy in the relief of pain and spasm with relief occurring in the greater proportion of cases in a 36 hour period. In a series of 69 cases of colic in which stone could not be demonstrated by x-ray, but where the clinical picture was essentially that of ureteral obstruction, the results obtained were similar.

Donnatal was also employed in 197 cases to ameliorate the discomfort and spasm following cystoscopy and ureteral catheterization. Donnatal was administered before and after the procedure, reducing the necessity for the use of opium derivatives to a minimum. In 45 cases of bladder neck spasm and 7 cases of cardiospasm donnatal was also effective in relieving symptoms.

institute STATISTICS

By PAUL F. COLE, CHIEF PHARMACIST
RECEIVING HOSPITAL, DETROIT

The second pharmacy institute was held in Chicago, Illinois May 19th through the 23rd. On the shores of Lake Michigan, the Continental Hotel housed the members and faculty. All lectures and discussions were presented in the Tally Ho Room of the hotel, not to mention the pharmacy discussed in the individual member's rooms. The theme of the institute was the practice of economy in hospital pharmacy. Evening sessions were few in number to allow the members to see Chicago, the city beautiful. With all the time off, where do you suppose the pharmacists spent their spare time? Right. Like a postman's holiday, the pharmacists scattered to see the various hospital pharmacies surrounding the institute headquarters.

Attendance at the institute was fine. A total of 123 registered. Probably a few statistics at this point would be of interest to everyone concerned.

Of those registered
- 117 were from the United States
- 3 were from Canada
- 3 were from Washington, D.C.

Types of hospitals represented
- 7 pharmacists were from Veterans Hospitals
- 6 pharmacists were from University Hospitals
- 4 pharmacists were from Childrens Hospitals
- 5 pharmacists were from Government Hospitals
- 2 pharmacists were from Old Peoples Hospitals
- 1 pharmacist was from Orthopedic Hospital
- 2 pharmacists were from Tuberculosis Hospitals
- 96 pharmacists were from General Hospitals

68 pharmacists were women (34 sisters) and 55 members were men.

As to the variation in age, the following statistics are worth while.

- 28 persons were from 21-30 years old
- 35 persons were from 31-40 years old
- 27 persons were from 41-50 years old
- 13 persons were from 51-60 years old
- 4 persons were from 61-70 years old
- 16 persons wouldn't tell - you probably can guess their sex.

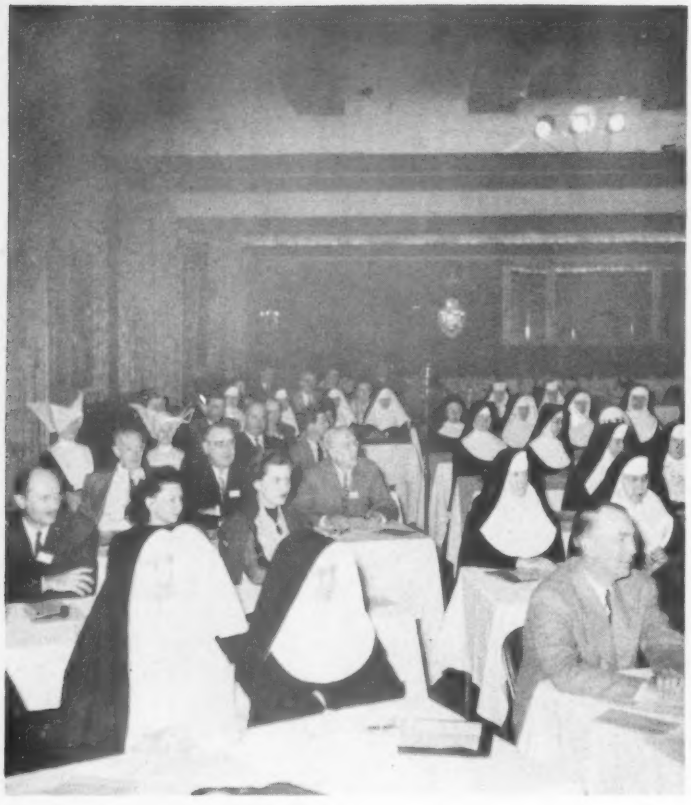
Experience
- 24 persons had experience of 2 years
- 27 persons had experience of 2-5 years
- 63 persons had experience of over 5 years

A total of 34 people were present that had attended the institute last year.

The institute was opened by Mr. Hans Hansen – chairman of the Program Committee. Dr. A. C. Bachmeyer started the series of lectures and discussions at the first group luncheon Monday at noon. From Monday through Friday the lectures continued fast and furiously. The rate in which the information was presented was too fast for anyone individual to absorb completely. But much information was obtained to be assimilated when the members returned to their respective hospitals.

An excellent faculty presented numerous viewpoints on hospital pharmacy topics of great value to the members. Those responsible for the sucess of the institute can be complimented.

Institutes of this type are excellent methods of keeping the mental processes flexible. It is the author's wish that future institutes will be as effective as the first two institutes were.



SCENES AT THE 1947 INSTITUTE ON HOSPITAL PHARMACY

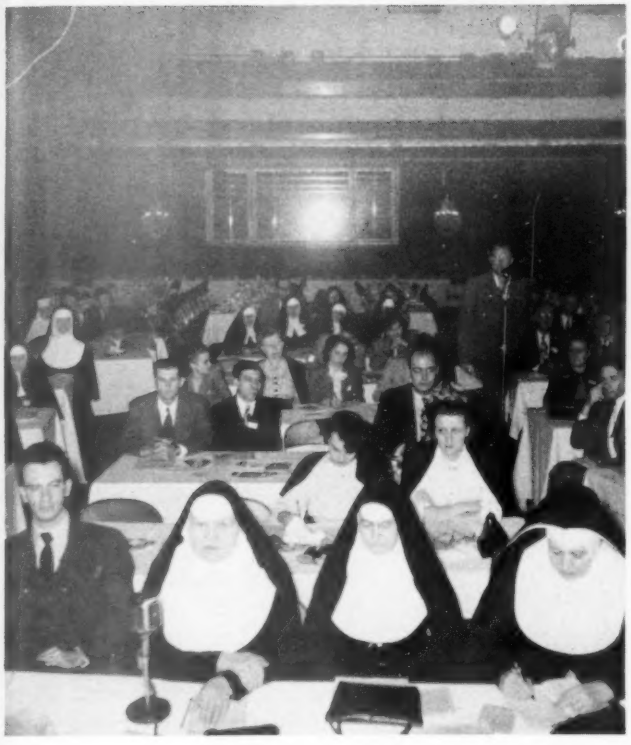
AMERICAN SOCIETY OF

Just about one year ago we were looking forward with anticipation to the first institute on hospital pharmacy. Today we can boast of the fact that the first institute proved so successful that we are again a part of an overflowing attendance marking the second institute under the joint auspices of the American Hospital Association and the American Pharmaceutical Association in cooperation with the American Society of Hospital Pharmacists. The attendance of this representative group is ample evidence of the keen desire of hospital pharmacists to be constantly prepared to give better service to the institutions of which they are a part and to the patients for whom these institutions exist.

You, who are taking part in this meeting, are bound to return to your respective hospitals with a broader outlook upon the general program of medical care for the sick and with greater enthusiasm for hospital pharmacy as an important contributing factor to this program.

In hospital pharmacy as in any professional service, individuals can speed general progress by group action. It is evident that great progress has been made in our field within the past decade. Each one of you has contributed a great deal to the advancement of your profession in your own way and at your own post of duty. This is bound to result in ultimate recognition for the branch of pharmacy of which you are a part.

*Presented at the 1947 Institute on Hospital Pharmacy, Chicago



HOSPITAL PHARMACISTS*

A BACKGROUND TO ITS GROWTH AND DEVELOPMENT

By GLORIA F. NIEMEYER, SECRETARY
DIVISION OF HOSPITAL PHARMACY

Playing an important role in the progress of hospital pharmacy is the American Society of Hospital Pharmacists - organized in 1943 as an affiliate of the American Pharmaceutical Association.

Reviewing the history of the Society for a moment we come to realize that the recognition which we have gained, like everything else worthwhile, has not come about without considerable effort coupled with a great deal of foresight and long continued work on the part of many hospital pharmacists. As far back as 1930 there was a keen interest in hospital pharmacy but it was not until 1937 that a Sub-Section on Hospital Pharmacy of the Section on Practical Pharmacy was established in the American Pharmaceutical Association. Through the efforts of this group and several local organizations of hospital pharmacists, the American Society of Hospital Pharmacists was established in 1943. Even prior to this time there was much evidence of activity on the part of hospital pharmacists to organize for the purpose of improving their branch of pharmaceutical practice. The Pharmacy Section of the Tri-State Assembly, made up of an active group of pharmacists from Indiana, Illinois, Michigan and Wisconsin, had met for several years. The Catholic Hospital Association had conducted a section on hospital pharmacy since 1936 and the American Hospital Association also showed an

interest in hospital pharmacy. In 1936 the first Report of the Committee on Pharmacy of the American Hospital Association was included in the Association's annual transactions. This was an epoch-making report. The Cleveland Society of Hospital Pharmacists was organized as early as 1938 and this group was instrumental in organizing the Ohio Society of Hospital Pharmacists in 1939.

At the Detroit convention of the A. Ph. A. in 1941 the Subsection on Hospital Pharmacy met and drew up the constitution and by-laws of your present American Society of Hospital Pharmacists which was approved by the Council of the A. Ph. A. the following year (Denver Convention, 1941). In 1943 the first official meeting of the Society was held at the A. Ph. A. convention in Columbus. Much work had been done during the previous year in perfecting the form of organization. Publication of the Bulletin was begun and efforts were made to organize local groups and to participate in various sectional meetings. With only 150 members, the organization showed marked ability in bringing about closer cooperation and understanding among its members for mutual benefit and the future of the American Society of Hospital Pharmacists looked brighter as the months passed.

Ten years ago when Dr. Spease, formerly Dean of the School of Pharmacy at Western Reserve University, spoke at one of the first subsection meetings on hospital pharmacy at an A Ph. A. convention, he outlined "The Present Status of Hospital Pharmacy." On reading his paper it is encouraging to note how far we have come toward gaining recognition both within our own profession and with the allied professions. Colleges have organized courses in hospital pharmacy; there has been a great deal of activity on the part of pharmaceutical organizations in behalf of hospital pharmacy; individual pharmacists have contributed to a number of hospital and pharmaceutical publications and have appeared before professional groups; and lastly, but most important, hospital pharmacists are giving better service to the institutions they are serving.

One of the questions about which Dr. Spease was concerned was "What recognition has hospital pharmacists received?" It is evident that he could foresee the growing importance of hospital pharmacy when he made the following statement in regard to the establishment of a subsection:

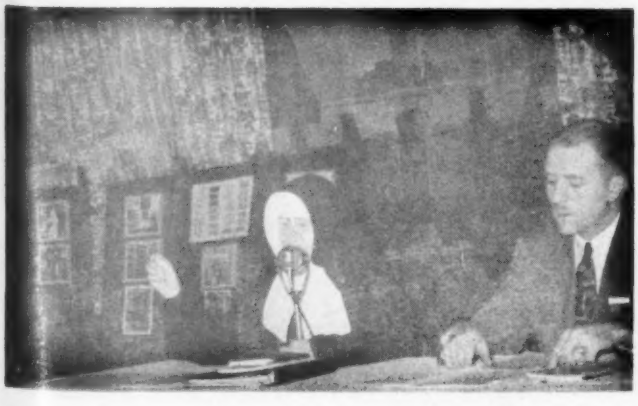
"I do not know if this action is merely a preliminary to the creating of a section or not, but surely hospital pharmacy is worthy of more recognition by pharmacy than this."

Left to right: Dr. A. C. Bachmeyer, director, University of Chicago Clinics, Hans S. Hansen, chairman, American Society of Hospital Pharmacists, I. Thomas Reamer, chief pharmacist, Duke University Hospital, Durham, N.C.

Then years have elapsed and we now have in addition to the American Society of Hospital Pharmacists, a Division of Hospital Pharmacy within the administrative structure of the A. Ph. A. to promote the activities of the A. S. H. P. at the Washington headquarters of our national organization. Also, hospital pharmacy is recognized as the key to the advancement of professional pharmacy in America. Therefore, what you and your organization plan and accomplish will be in the nature of a Guiding Light for American pharmacists of the future.

The fact that you have organized and carried on your activities during the war years - a most difficult time - is a tribute to those who have given so much of their time and energy to the cause. It also indicates your faith in the future of pharmacy as a profession - more specifically in hospital pharmacy. That this faith and vision were justified is recorded in the progress that has been made in the growth of our membership, the progress which individual hospital pharmacists have made within their own institutions and the gradually increasing recognition of hospital pharmacy as a specialty of the practice of pharmacy among hospital administrators, allied professions and the profession of pharmacy itself.

Let us pause a moment to reflect upon the value of the Society to you. Actually, the real and lasting values are to be found in your own intellectual achievements, your satisfaction in the more efficient performance of your daily tasks, and the enlarged contribution you make to the general activities of the staff and the institution you serve, and to the welfare of its patients. We hope and firmly believe that the encouragement and inspiration which you have received as a result of your affiliation with the Society have broadened your influence as a pharmacist.



Left to right: Sr. M. Clara Francis, chief pharmacist, St. Joseph Hospital, Memphis, Tenn., L. C. Klemme, chief pharmacist, Elmhurst Community Hospital, Elmhurst, Ill.

Through the years, undoubtedly some of you have had some misgivings as to the future of such an undertaking such as the organization of hospital pharmacists on a nation-wide scale. You did not want just another organization, but rather one which you could serve and in turn, one which could serve you.

As a result of the interest you as individuals have shown, the A. S. H. P. has grown and is a well established organization. With more than eleven-hundred members we can assure ourselves that we are a potent and influential group.

Through the establishment of the Division of Hospital Pharmacy at the headquarters of the A. Ph. A. in Washington, jointly by the A. Ph. A. and the A. S. H. P., an effort is being made to strengthen hospital pharmacy. We need the guidance which the parent organization can give us and in turn, they need our support as members of an important branch of pharmacy. Current plans are going forward to increase the membership of the Society. It is also planned to promote the organization of local groups in those areas where they are not already organized; to maintain an information service to hospital pharmacists; and to carry out surveys which will be a key to future activities of the Society. Other activities are being planned and will be carried out by the Division of Hospital Pharmacy. Through the combined efforts of the A. Ph. A. and the A. S. H. P. working through the Division of Hospital Pharmacy, we are now able to serve you from the headquarters of A. Ph. A. in Washington, properly recognized as the source of professional pharmaceutical activity in America.

We face the future with much anticipation. Recent predictions indicate that in the near future there may be 10,000 pharmacists identified with our specialty in the United States. Our expectations are soaring high and we are living in a period of profound changes in our national life. Each of you will want to seriously consider the importance of the Society to you in making future plans.

If I were asked to write a prescription for the advancement of hospital pharmacy I would say:

Take of your time and energy, each a sufficient quantity, mix with equal parts of loyalty to your calling and to your institution; apply daily. Return annually to the Hospital Pharmacy Institute for further instruction. Get plenty of exercise through skull practice with the A. S. H. P. BULLETIN and Journals of the A. Ph. A. and renew friendships and exchange information at the annual meetings of the A. S. H. P. and A. Ph. A.

See you in Milwaukee in August.

THE VETERANS ADMINISTRATION PHARMACIST

EDITED BY EDDIE WOLFE, CHIEF PHARMACIST, MT. ALTO VETERANS HOSPITAL
WASHINGTON, D.C.

MEET A BRANCH PHARMACIST

Vernon O. Trygstad

Branch No. 8 includes the states of Minnesota, North Dakota, South Dakota, Iowa, and Nebraska. In this area are pharmacies in V. A. Hospitals at Minneapolis and St. Cloud, Minnesota; Fargo, N. Dakota; Lincoln, Nebraska; Knoxville and Des Moines, Iowa; Fort Meade and Hot Springs, South Dakota; also in the Regional Office, Minneapolis, and Sub-Regional Office in Omaha, Nebraska. Fargo, Des Moines, Lincoln, and Hot Springs presently are operating as Centers in which out-patient and in-patient pharmacy services are combined. Among this group plans are now in progress for separation of out-patient pharmacy service from the hospitals at Lincoln and Des Moines with establishment of Regional Office Pharmacies in these cities. Such a plan has worked out very well in Minneapolis with the Regional Office Pharmacy, established within the past year, taking the bulk of the out-patient prescription load and allowing the hospital pharmacy staff to concentrate on pharmacy services within the hospital. Plans are also being made and carried out in this area for establishment of pharmacies in the Regional Office at Sioux Falls, South Dakota, in the Sub-Regional Office at Duluth, and at the Fort Snelling Annex of the Minneapolis V. A. Hospital.

It has been a pleasure to note that standards of V.A. Pharmacy personnel are high and that V.A. Pharmacies do take pride in maintenance of their pharmacies on a high level.

Deserving of mention too, are the Pharmacy Helpers, who have done much to aid and add to the efficiency of the Pharmacy Service. Inclusion of the Pharmacy Helper on the Pharmacy Staff has worked out well in giving the pharmacist more time to devote to his professional duties and has resulted in cleaner and neater pharmacies.

This branch is now in the process of establishing the position of Relief Pharmacist whose primary duty will be to relieve pharmacists in the field for vacations, illness and other emergencies. This pharmacist is expected to be particularly valuable in cases where there is only one pharmacist assigned to the station. It will serve to enable such pharmacists to plan real, well deserved vacations, and will eliminate the present necessity for assignment of a staff physician to act as substitute pharmacist during prolonged absences of the regular pharmacist.

We are hoping to make other changes and additions in the near future so that our service will be even more valuable to our individual pharmacists.

Vernon O. Trygstad, Chief of the Pharmacy Section of Branch No. 8, earned his B.S. in Pharmacy at North Dakota State in 1936. In 1940 he joined the Federal Bureau of Narcotics and was assigned to duty in New York and Washington, D. C. During World War II he was on active duty as a Lieutenant (j.g.) in the Pacific aboard the U.S.S. Tryon (APH-1). In March 1946 Mr. Trygstad was released to inactive duty and in October of that year he was appointed to Branch No. 8.

YOUR V.A. QUESTION BOX

RUBBING ALCOHOL

Q. Is there a standard on V.A. rubbing alcohol? New York.
A. Refer to R&P 6856.

PROMOTION

Q. Is it true that a Pharmacist in the V.A. who does not have a B.S. degree, cannot get a promotion in the Pharmacy Section? Washington, D.C.
A. Sorry, but it's true at the present.

ALCOHOL AMPULES

Q. Where can we obtain absolute alcohol in ampules? California.
A. The only firm we know of that used to manufacture this product was the Endo Co., but they have discontinued this item. If anyone has information on this item, we'd like to know.

EURESOL

Q. Is there any way we can buy Euresol except on an emergency order? Virginia.
A. Resorcinol monoacetate is now on the approved list.

PYRUVIC ACID

Q. Where can pyruvic acid be obtained? What percentage is used in the paste form and how is it prepared? Missouri.
A. Obtained from Eimer and Amend. The formula with method of manufacture is on page 29 of the April-May 1947 issue of THE BULLETIN.

P-4 POSITIONS

Q. Are there any P-4 Pharmacist positions open in V.A. Hospitals? Pennsylvania.
A. P-3 is the highest hospital Pharmacist position. P-4 Pharmacist positions are designated as Chief Pharmacist for a Branch Office.

pharmacy IN THE VETERANS ADMINISTRATION

By E. BURNS GEIGER, CHIEF
PHARMACY OPERATIONS

E. Burns Geiger

With the President's approval on January 3, 1946, of Public Law 293, the Department of Medicine and Surgery was established in Veterans Administration. This law provided for the appointment of a Chief Pharmacist responsible for the development and operation of an overall pharmacy service, and further provided that all new appointees as pharmacist must possess a bachelor of science degree in pharmacy from an accredited school or college, and be currently registered in one of the 48 states or the District of Columbia. In March 1946, Mr. W. Paul Briggs, then Dean of the George Washington University School of Pharmacy and former Commander in the U. S. Navy, was appointed to this post. Previously, pharmacy service had been available in the various hospitals, but this marked the first time, in the 29 years of Veterans Administration, that a pharmacy division, headed by a Chief Pharmacist, had existed. The office

of the Chief, Pharmacy Division, is organizationally divided into a technical and operations section, each headed by a pharmacist, with the Chief Pharmacist having overall responsibility.

The magnitude of this pharmacy service can best be visualized if it is borne in mind that of the 18 million veterans of all wars, there are approximately two to three million with service connected conditions. To supply adequate professional pharmacy service there are at present 325 professional grade pharmacists, and an additional 90 sub-professional personnel employed in V.A. activities. These activities include 125 hospitals with approximately 100,000 bed capacity, 75 regional offices, and other scattered activities with medical facilities, compounding an average of 270,000 prescriptions monthly.

In the year since the organization of the Pharmacy Division, many improvements have been accomplished, and the overall pharmacy service has been standardized. The pharmacist is responsible for the orderly and efficient arrangement of all drug stocks and the maintenance of all equipment in proper working order. Every possible safeguard is taken to avoid errors and to provide for the preservation by refrigeration, or otherwise, of all drugs requiring special storage. Habit-forming drugs are separated from other drugs and maintained in a secure manner, and all narcotics are stored in a suitable safe, locked at all times.

Issues are made from the pharmacy only on presentation of properly completed ward order forms or non-refillable prescriptions signed by a physician. In the instance of routine narcotic supplies for in-patient use, issue is made only to the appropriate ward nurse or her designate. All prescriptions are serially numbered and dated, and in addition narcotic prescriptions, are cancelled by the pharmacist affixing his signature to the face of the prescription. Prescription labels include the prescription number, date filled, patient's name, complete directions for use, and the prescriber's name. When indicated, auxiliary labels bearing necessary warnings, special instructions, and precautions, are attached.

In the interest of economy, pharmacy personnel manufacture pharmaceuticals such as tinctures, elixirs, syrups, liniments, etc. Monthly, or oftener, the Chief Pharmacist makes a survey of all drugs stocked in the wards or clinics to insure that deteriorated stock is replaced, surplus stock removed, and illegible labels replaced. He also insures that such supplies are maintained in a convenient, efficient, and economical manner. The pharmacist also informs the supply officer of necessary precautions to be observed in the bulk storage of drugs in the supply officer's custody.

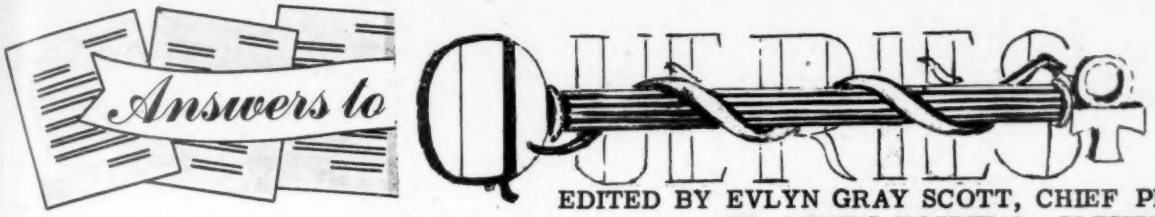
Serving as secretary of the Committee on Therapeutic Agents, at all activities having medical facilities the pharmacist reports on prescribing trends, supplies information on new drugs available in the pharmacy, excess stocks, if any accumulated through changing demands of physicians, and suggestions for the utilization of this excess stock. In this connection, essential records of drugs dispensed are maintained in such manner that average consumption rates can be estimated for the information of the clinical director or the Committee on Therapeutic Agents. These reports are also used in Washington for revising current drug item lists.

The pharmacist is responsible for the custody, proper labelling, and the maintenance of pertinent records of all experimental or investigational drugs which have been authorized for use within the activity by the Executive Committee on Therapeutic Agents in Washington. These drugs are issued only upon presentation of a prescription of the staff member specifically authorized to use each drug. The prescription also carries the counter-signature of the chief medical officer or clinical director of the using activity. The pharmacist must follow specific rules in labelling all such drugs, and in every case marks the prescription label in capital letters with the legend, "NOT FOR GENERAL USE." Records pertaining to the quantity stocked, source of the material, and amounts prescribed, are the responsibility of the designated pharmacist.

In addition to an up-to-date reference file on new drugs and new trends in medical therapy, an established minimum working library is maintained in the pharmacy, containing: U S.P., NF, U. S. Dispensatory, Principles of Pharmacy, Remingtons Practice of Pharmacy or American Pharmacy 1945, Pharmaceutical Recipe Book No. 3, New and Non Official Remedies, Pharmacological Basis of Therapeutics, Manual of Pharmacology, Modern Drug Encyclopedia and Therapeutic Guide, Merck Manual and Index, Pharmaceutical Calculations or Course in Pharmaceutical and Chemical Arithmetic, or Arithmetic of Pharmacy, and Scoville's The Art of Compounding or Pharmaceutical Dispensing. In addition, the following journals are received: Drug Topics, including the Redbook Price List or American Druggist, including the Blue Book Price List, Scientific and Practical Editions of the Journal of the American Pharmaceutical Association, and the American Professional Pharmacist. All pharmacists are encouraged to maintain membership in professional pharmaceutical societies including the American Pharmaceutical Association, American Society of Hospital Pharmacists, and state and local associations, and to attend and participate in all professional meetings.

The pharmacist receives and interviews all

-Continued on page 114



EDITED BY EVLYN GRAY SCOTT, CHIEF PHARMACIST,
ST. LUKE'S HOSPITAL, CLEVELAND

A NEW SERVICE TO THE MEMBERSHIP PROVIDED BY THE AMERICAN SOCIETY OF HOSPITAL PHARMACISTS. MEMBERS ARE INVITED TO SUBMIT QUESTIONS AND PROBLEMS FOR DISCUSSION, TO EXTEND OR MODIFY ANY OF THE ANSWERS GIVEN ON THESE PAGES, AND TO ACTIVELY PARTICIPATE TO MAKE THESE PAGES TRULY AN OPEN FORUM FOR THE ADVANCEMENT OF HOSPITAL PHARMACY.

ESERINE EYE SOLUTIONS

J. M. of Ohio asks what can be done to keep eserine eye solutions from turning red.

Since this color is due to the oxidation of the physostigmine salt, the problem is to find a method to prevent this or at least slow the reaction down. We have had the most success with the formula suggested by Arrigoni, Tozer and Fischer in an article published in the BULLETIN OF THE NATIONAL FORMULARLY COMMITTEE January-February (1945) under the title of, "Formulas for Isotonic, Buffered and Preserved Ophthalmic Solutions." The modification we are using is:

Sodium Formaldehyde Sulfoxylate	0.02 Gm.
Preserved Water, to make	100.0 cc.

This is used as the solvent for the physostigmine salicylate.

The formula for the preserved water is as follows:

Methyl-p-hydroxybenzoate	0.26 Gm.
Propyl-p-hydroxybenzoate	0.14 Gm.
Distilled Water, to make	1000.0 cc.

DEODORIZERS FOR ISOPROPYL ALCOHOL

D. F. of Michigan wants to know what can be done about the odor of isopropyl alcohol.

The odor that is given off seems to vary with the product of different companies, as well as with different lots. The following information was obtained directly from the companies that sell the various materials to help overcome this objectionable odor. We have had no personal experience with these odor modifiers but we are experimenting with some of the following. The results will be reported later.

Alcocene Compounds

Alcocene compounds are supplied by Givaudan-Delawanna, Inc., 330 West 42nd St., New York 18, N.Y. Alcocene is an extraordinarily good deodorant for isopropyl alcohol at economical unit cost, since 1/10 to 1/20 of 1% incorporated in the alcohol furnishes excellent coverage for the characteristic odor. Not perfumy, it carries very little odor of its own and blends well with any other aromatic compound which is to be used.

The particular efficiency of these isopropyl alcohol odors lies in the fact that they are double-duty compounds, as they first deodorize the garlicy odor of isopropyl alcohol, and second, furnish an outstanding perfume.

When used in a 50% solution of isopropyl alcohol, between 1/2 ounce and a full ounce proves extremely efficient. If you increase the alcohol solution to 70% strength, it is wise to use between 3/4 ounce to 1 1/2 ounces. These ratios depend on the strength desired.

	1 pound	5 pounds
Alcocene	$6.45 lb.	$5.60 lb.
Spice I.P.A.	7.15	6.40
Lilac I.P.A.	5.50	4.50
Bay Rum I.P.A.	5.25	4.25

Odor Modifiers

These odor modifiers may be obtained from Fritzsche Brothers Inc., 76 Ninth Ave. at 15th St., New York 11, N.Y. One-quarter ounce of the modifier added to a gallon of 91 or 99% isopropyl alcohol will tone down and soften the harsh surface odor of the solvent. To obtain optimum results it is recommended that the modifiers be added a week or more before the solvent is required for actual production. The modifiers will blend with practically any fragrance employed in modern perfumery. For example, if a perfume is basically of a lilac character ODOR MODIFIER LILAC #22 can be used. If a perfume is a blend of various flower notes ODOR MODIFIER WISTARIA #10 is suggested.

Above mentioned modifiers priced as follows:

	1 pound bottle	5 pound bottle
Lilac #22	$6.90	$8.63
Wistaria #10	6.25	6.18

Isopropyl Alcohol Modifiers

P. R. Dreyer, Inc., 119 West 19th St., New York 11, N.Y , supply isopropyl alcohol modifiers. The following products have been developed for use with isopropyl alcohol to give it a smoother top-note.

Isopropyl Modifier "A"	$3.00 per pound
Isopropyl Modifier "B"	4.00 per pound
Isopropyl Modifier "C"	4.00 per pound

The "A" is recommended to be used in the proportion of 1/4 ounce to 1 gallon of isopropyl alcohol.

"B" and "C" are used in the proportion of 1/8 ounce to 1 gallon of isopropyl alcohol.

The difference between the "B" and "C" – although these are offered at the same price and used in the same proportion - is that the "B" evaporates almost completely, whereas the "C" leaves a flowery after-odor when the isopropyl alcohol has evaporated.

Maskol

Maskol is supplied by Van Dyk & Company, Main & William Streets, Belleville 9, N.J. Maskol 1216, $6.00 per pound, is an oil that is being used extensively as a masking agent for isopropyl alcohol. The rate at which it is used usually ranges from 1/8 ounce to 3/8 ounce per gallon. The treated isopropyl alcohol should be allowed to stand for about a month in order to give full value to the masking property of the product.

PHARMACY IN THE V.A.

-Continued from page 112

drug manufacturers' representatives, conveying all special inquiries from physicians to such representatives, and obtains technical information and literature for reference in the pharmacy, and for transmission to the interested medical personnel through the Committee on Therapeutic Agents.

In order to maintain adequate professional pharmacy service at all activities during times of illness and vacations of regularly assigned pharmacy personnel or unusual peak load periods the position of "Rotating Pharmacist" has been established in each of the thirteen Branch Offices. The "Rotating Pharmacist" is assigned to the cognizant Branch Office for Administrative purposes and detailed as necessary to the various activities for temporary duty. This insures a registered pharmacist on duty at all times.

Plans are presently being formulated in Washington for the training of new and presently employed pharmacy personnel. These plans include indoctrination, refresher training and post graduate work in order that pharmacy personnel in Veterans Administration can keep abreast of the new and rapidly changing trends in Pharmacy and its allied professions.

METOPON

-Continued from page 102

ADVANTAGES

One of the outstanding advantages of metopon is the fact that it can be used with good results in cases where morphine is no longer effective in controlling pain, metopon having at least double the analgesic effectiveness of morphine. In addition the drug is highly effective after oral administration, thus obviating the necessity for hypodermic injection. The absence of nausea and vomiting even in patients who vomit with morphine, the absence of mental dullness and the slow development of tolerance and dependence make metopon a most valuable drug in the treatment of chronic malignancies.

Penicillin

TIMELY DEVELOPMENTS RECORDED FOR THE HOSPITAL PHARMACIST

AEROSOL PENICILLIN AND STREPTOMYCIN

Abramson, Harold A., Principles and Practice of Aerosol Therapy of the Lungs and Bronchi, Ann. Allergy, 4:440 (Nov.-Dec.) 1946.

The clinical application of aerosol therapy is described for epinephrine, penicillin, streptomycin, sulfonamides, and hydrogen peroxide. The terms aerosol, atomization, nebulization, vaporization and aerolization are defined. The term aerosol is from the Greek word meaning "air", and the term "sol" denotes the colloidal state. Thus an aerosol is a suspension of particles in a gas. The term aerosol in this sense has nothing to do with the wetting agent Aerosol O.T.

The apparatus used in aerosol therapy is described. The author emphasizes that a nebulizer with a baffle should be chosen for aerosol therapy. Thus smaller particles are produced which may reach the recesses of the lungs by convection. The DeVilbiss #40 is suggested. Ordinary atomizers produce too large particles for effective aerolization. However ordinary atomizers may be used for large particle therapy of the trachea and bronchi. Particle size of aerosols and their importance is emphasized. In order to have the lungs retain most of the inspired particles, the particles must be above a critical radius, 0.5 micron. Smaller particles are not retained. Two factors controlling particle size are vapor pressure of droplet and surface tension of droplet. Vapor pressure of droplet can be lowered by adding glycerin, urea, sugars and salts. Emphasis is placed on the importance of adding glycerin to epinephrine solutions for inhalation to stabilize the mist. About 25% of glycerin is added. Penicillin itself stabilizes mist and the addition of glycerin is not necessary. Calcium penicillin is preferred. The behavior of streptomycin in strong solutions is similar to penicillin. With hydrogen peroxide, 10% glycerin is sufficient.

A minute amount of wetting agent Aerosol O.T. does not stabilize particle size.

Streptomycin, 250 units per cc. in physiological saline was used as an aerosol, (500,000 units per day), sometimes combined with penicillin.

Urea peroxide or hydrogen peroxide may be given by inhalation in nontuberculous suppurative disease. In most cases the peroxide is given for 2 days alternated with aerosol penicillin for 2 to 4 days. Three percent urea peroxide with 10% glycerin in physiological saline was used.

LINGUAL-ORAL PENICILLIN ABSORPTION

Egoroff, B.: New Lingual-Oral Method of Administration of Penicillin, Vrach. Delo, 1946, p. 255; abstr. Surg., Gynec. & Obst. (Internat. Abst. Surg.), 84:184 (Feb.) 1947.

While absorption of penicillin from lozenges is very slow, the drug reaches the circulation very promptly after its application to the tongue in liquid form. Penicillin is absorbed by the tongue, the lips, gums, mucous membranes of the oral cavity, palate, tonsils, pharynx, and possibly also the larynx. The 3 routes of absorption are through the veins, lymph vessels and the perineural and endoneural paths. 100 thousand units of penicillin (dry) are dissolved in 1 cc. of water, normal saline or 40% glucose. One drop of the solution contains 5,000 units of penicillin. One to 2 drops are applied to the tongue every 30 to 60 minutes and the patient is instructed not to swallow but to distribute the solution with the tongue over the palate, lips, and gums. If larger doses are required, 10 drops may be administered at once. If the tongue is coated it should be cleansed with a toothbrush before the administration of penicillin.

STABILITY OF PENICILLIN IN GLYCOLS

Ferlauto, R. J., and Clymer, H. A.: Stability of Penicillin in Glycerin and in Glycols, Science,

-Continued on page 119

WHAT'S NEWS ABOUT

The Vitamins

B-COMPLEX FOR CIRCULATION TIME

Swenson, Roy E:: Parenteral Vitamin B as an Agent for Determining the Arm-to-Tongue Circulation Time, Am. Heart Jour., 32:612 (Nov.) 1946.

Duplicate circulation times were determined using a parenteral preparation of vitamin B complex containing thiamine, riboflavin, pyridoxine, pantothenate and nicotinamide. In 50 normal subjects the average time varied from 9.8 to 10.3 seconds in the first and duplicate determinations. In 52 patients with cardiac disease the time paralleled the times determined by other methods. Tables show the data for different types of cardiac conditions. Vitamin B complex appears to be nontoxic, has little effect upon circulatory dynamics, is rapidly eliminated and has an abrupt end point. Side reactions are minimal. It meets requirements for a satisfactory agent for determining arm-to-tongue circulation time. Studies are under way to determine which component of the B factor is responsible for the distinctive end point. For answer see next abstract.

THIAMINE FOR CIRCULATION TIME

Riskin, Arthur, and Decherd, George M., Jr.: Thiamine Circulation Time, Am. Jour. Med. Sc., 213:337 (Mar.) 1947.

The normal circulation time as determined by injecting intravenously 300 mg. of thiamine hydrochloride was 4 to 8 seconds in children and 5 to 13 in adults. Studies were made in 295 different subjects and the values were recorded for various grades of congestive heart failure and other disorders. Normal circulation times determined by 20 methods are tabulated.

Reference to original papers describing drugs used in circulation time determinations included.

To eliminate the volume and dosage factors, all measurements were made with 1 cc. of solution containing 300 mg. of thiamine hydrochloride injected rapidly intravenously, and timed from the beginning of the injection to the moment the subject first signified the perception of the nutlike taste or smell of the drug. Most patients tasted and smelled the drug simultaneously, but others noted the taste or smell alone, or one soon after the other. Complete failure to taste or smell the drug occurred in 13 to 295 cases, and obviously false high readings up to 120 seconds occurred in 9 others.

FOLIC ACID DOES NOT REPLACE LIVER IN PERNICIOUS ANEMIA

Vilter, C. F., Vilter, R. W. and Spies, T. D.: The Treatment of Pernicious and Related Anemias with Synthetic Folic Acid: I. Observations on the Maintenance of a Normal Hematologic Status and on the Occurrence of Combined System Disease at the End of One Year, Jour. Lab. & Clin. Med., 32:262 (Mar.) 1947.

The study was undertaken to answer 2 points: will folic acid control pernicious anemia and that of sprue for long periods as well as liver extract and will it prevent the development of neurologic complications or cure them? It is evident, from the cases reported here, that folic acid does not prevent the occurrence of combined system disease nor do massive doses halt or reverse the degenerative process once it has begun. Liver extract bettered the neurologic picture. It is suggested that liver extract contains an unknown factor essential for maintaining the integrity of the central and peripheral nervous systems in patients with pernicious anemia. Folic acid cannot be considered a satisfactory or complete treatment for pernicious anemia and should not replace liver extract in routine treatment until another method for the protection of the nervous system is devised.

-Continued on page 119

CURRENT LITERATURE

HOSPITAL MANAGEMENT

April 1947 - "Hospital Pharmacist Termed Vital Link in Medical Services to Patient" - Report of a discussion on "The Modern Hospital Pharmacy" given by Don E. Francke on "The Doctors Talk It Over" radio program. page 96

"Progress in Antibiotic Therapy Has Unlimited Possibilities" by Chester S. Keefer, M.D. - Discussion of recent advances in antibiotic therapy. page 98

May 1947 - "Hospital Pharmacy Management From Viewpoint of Administrator" by Paul Fleming, Assistant Administrator, Grace-New Haven Hospital, New Haven, Conn. - from a paper read before the pharmacy section of the New England Hospital Assembly at Boston, Mass., March 25. Mr. Fleming outlines the key to success of the hospital pharmacist in working with the hospital administrator. He urges the hospital pharmacist to be a member of the A. Ph. A. and the A. S. H. P. and to cooperate with the A. H. A. page 84

"Mrs. Anna Thiel Takes Over As Southern Pharmacy Head" - Report of the Southeastern Hospital Pharmacists' Association which was held in Biloxi, April 11. page 88

MODERN HOSPITAL

May 1947 - "Parenteral Fluid Therapy" - A brief outline including a table which summarizes the most frequently used solutions and their specific uses. page 94

SOUTHERN HOSPITALS

March 1947 - "With the Hospital Pharmacist" edited by D. O. McClusky, Jr. - Items of interest to hospital pharmacists including a description of the University of Michigan Hospital Pharmacy. page 66

April 1947 - "With the Hospital Pharmacist" includes program of the Southeastern Hospital Pharmacists' meeting in Biloxi. page 70

May 1947 - "Contributing to the Journals" by Herbert Flack, Jefferson Medical College Hospital, Philadelphia - Hints to the hospital pharmacist who is writing for pharmaceutical and hospital publications. page 91

AMERICAN PROFESSIONAL PHARMACIST

April 1947 - "Professional Opinions and Practical Experience" - Views of several hospital pharmacists concerning the controversy on the N.A.B.P. ruling in regard to practical experience and how it effects hospital pharmacists. page 370

May 1947 - "Why Not A Representative Board of Pharmacy?" Representation on State Boards of Pharmacy and on the National Association of Boards of Pharmacy is discussed from the hospital pharmacists' viewpoint. page 469

"Manufacturing In A Small Hospital Pharmacy" by J. R. Cathcart, Chief Pharmacist, Chester County Hospital, West Chester, Pa. - Operation of the pharmacy in a 152-bed institution is described. page 470

JOURNAL OF THE A. PH. A.

April 1947 - "Comments on N. A. B. P. Experience Standard" (Editorial) - Hospital Pharmacists express their views in regard to the N. A. B. P. ruling page 218

"Hospital Queries" by John Zugich - Questions and answers of interest to hospital pharmacists. page 220

NOTES AND SUGGESTIONS

EDITED BY GEORGE L. PHILLIPS

PENICILLIN DILUENT BUFFERED

The stabilization of penicillin in solution for injection by the addition of small amounts of sodium citrate has been suggested. Without buffering, crystalline penicillin G appears to be less stable in solution than amorphous penicillin G. The citrate-sodium chloride mixture may be used for diluting either crystalline or amorphous penicillin. The formula given below contains sodium citrate in a concentration of M-300 and sodium chloride 0.9%.

Sodium Citrate U.S.P.	1.0 Gm.
Sodium Chloride U.S.P.	9.0 Gm.
Freshly Distilled Water, to make	1000.0 cc.

Make solution. Filter through Berkefeld or similar type candle. Package in suitable containers and sterilize in autoclave at 15 pounds for 20 minutes. Reference: Lancet (March 29, 1947) p. 408.

PREPARATION OF EPINEPHRINE SOLUTIONS

Solutions of epinephrine hydrochloride suitable for injection, inhalation, or topical application may be prepared in the hospital pharmacy laboratory with a considerable saving to the hospital.

EPINEPHRINE INHALATION U.S.P. XIII (1%) (1-100)

Epinephrine Powder U.S.P.	11.0 Gm.
Sodium Chloride U.S.P.	5.5 Gm.
Chlorobutanol	5.0 Gm.
Sodium Bisulfite	0.9 Gm.
Hydrochloric Acid Dilute (10%)	22.0 cc.
Activated Charcoal *	1.0 Gm.
Distilled Water, to make	1000.0 cc.

Heat 900 cc. of distilled water to boiling to expel oxygen. Dissolve the sodium chloride and chlorobutanol in the hot distilled water and cool to room temperature. Dissolve the epinephrine in the dilute hydrochloric acid solution and finally add the epinephrine hydrochloride and sodium bisulfite to the cooled solution of sodium chloride and chlorobutanol. The epinephrine is converted to its water soluble salt, epinephrine hydrochloride. Make up to volume by adding sufficient boiled distilled water to make 1000 cc. Adjust the solution at this point to a pH of approximately 3.0 by adding N/10 hydrochloric acid or N/10 sodium hydroxide whichever is indicated. Decolorize the solution by adding the activated charcoal and allowing to shake for fifteen minutes. Filter through paper returning the first portions of the filtrate until the filtrate becomes clear. Finished product should not be darker than a very light yellow. Saturate finished product with carbon dioxide to help reduce oxidation to a minimum and resaturate with carbon dioxide whenever bottle is opened and used. Store in refrigerator. This 1-100 solution is used for inhalation only and should not be confused with the solution for injection or topical application which is only ten percent as strong. Epinephrine inhalation may be most conveniently and economically used by means of a nebulizer of the De Vilbiss #40 type.

To overcome dryness and irritation of throat five percent glycerin may be added replacing an equal amount of water in the finished product. Avoid all metallic contacts in preparing epinephrine solutions. Pyrex glass containers should be used throughout.

An extra ten percent of epinephrine is included in the formula to compensate for loss in handling and absorption by the activated charcoal.

EPINEPHRINE INJECTION U.S.P. XIII

Epinephrine U.S.P. Powder	1.1 Gm.
Sodium Chloride U.S.P. or A.R.	8.0 Gm.
Chlorobutanol	5.0 Gm.
Sodium Bisulfite	0.9 Gm.
Hydrochloride Acid Dilute (10%)	2.2 cc.
Freshly Distilled Water, to make	1000.0 cc.

Follow same general directions as for preparing epinephrine inhalation except that freshly distilled water or Water for Injection U.S.P. should be used. Decolorization with charcoal may be omitted if desired as at this dilution the discoloration is slight. Final filtration should be made through a sintered glass filter to sterilize the solution as per U.S.P. Sterilization Process F.

Epinephrine Injection U.S.P. may be used for Epinephrine Solution U.S.P. as they are of equal strength (1-1000). Epinephrine Injection should be packaged aseptically in 10 cc. amber serum bottles with rubber diaphragm and stored in a refrigerator. Epinephrine Solution for topical use may be conveniently put up in 30 cc. amber screw cap bottles. Epinephrine solutions may be assayed according to the U.S.P. method using U.S.P. epinephrine reference standard. Epinephrine powder is obtainable from several sources including Armour Packing Company, Chicago, Illinois.

References

Drug and Cosmetic Industry (October 1943) p. 433.
Drug and Cosmetic Industry (January 1947) p. 99*
Journal Allergy 14:382 (1943)

*Reference on activated charcoal absorption stating that activated charcoal will absorb not more than 35% its own weight of solids from solution.

VITAMINS

-Continued from page 116

VITAMIN E IN HEART DISEASE

Shute, Wilfred, Shute, Evan, and Vogelsang, A.: Vitamin E in Heart Disease: I. The Anginal Syndrome, Med. Rec., 160:91 (Feb.) 1947.

Histories of 84 patients with symptoms and signs of heart disease in addition to precordial pain are tabulated. Previous treatment and condition are contrasted with the present condition under vitamin E therapy. The dosage of vitamin E compounds ranged from 175 mg. to 600 mg. daily in terms of alpha tocopherol (a capsule containing 50 mg. mixed tocopherols was equated to 25 mg. alpha tocopherol). Usual dosage ranged from 200 to 300 mg. daily. The great majority of patients showed definite signs of improvement, could walk farther, work more, felt better, etc.; this was an unselected series and all were treated, regardless of the severity of the condition. Larger doses may be of greater value but it is concluded that these doses of vitamin E are of value in the treatment of anginal pain.

PENICILLIN

-Continued from page 115

105:130 (Jan. 31) 1947.

The stability of various commercial preparations of sodium and calcium penicillin was studied in undiluted glycerin, propylene glycol and carbowax at 5°, 23° and 37° C. Despite some fluctuations due to impurities, lot, etc., sodium penicillin amorphous was most stable and the calcium salt least stable, in glycerin and glycols, with crystalline sodium penicillin occupying a middle position. All were more stable in carbowax, a water miscible polyethylene glycol obtainable from Carbide and Chemical Corporation. A formula for a carbowax ointment base suggested for use with penicillin and other antibiotics will appear in the next issue of THE BULLETIN. In distilled propylene glycol, all penicillin salts were more stable in the first 2 fractions than in undistilled solvent and less stable in the third fraction of distillation.

PENICILLIN DUSTING POWDER

Golden, Milton J., and Neumeier, Franz M.: Penicillin Dusting Powders, Am. Profess. Pharm., 13:153 (Feb.) 1947.

The stability of sodium and calcium penicillin in combination with various dusting powder bases of therapeutic usefulness was determined. Of the various dusting powder combinations studied, zinc stearate was the most effective in maintaining the activity of penicillin calcium. A 4% loss of activity of calcium penicillin was observed at the end of 6 months; in talc the loss of activity in the same time was 37.5% while in kaolin it was 31%. Sodium penicillin in the same powders was almost completely inactivated at the end of 3 months.

The powders were prepared by triturating the required amount of calcium penicillin with a small quantity of powder, and then mixing this thoroughly with the remainder of the powder and finally sifting the mixture through a 40 monel sieve.

Timely Drugs

PENTOTHAL RECTAL - OENETHYL - MESANTOIN - CARONAMIDE - METOPON - ARE DRUGS OF TIMELY INTEREST TO THE HOSPITAL PHARMACIST.

PENTOTHAL RECTALLY . . . Pentothal sodium has recently been released in a form suitable for rectal administration. Given rectally in a dosage of 1 gram for every 50 pounds of patient's body weight pentothal sodium is employed as a basal anesthetic in many surgical procedures where smooth induction is especially desired. In some minor surgical procedures, such as cystoscopy, pentothal administered rectally is satisfactory without supplementation by other anesthetic agents. However, the majority of surgical cases require supplementation with nitrous oxide-oxygen, cyclopropane or ethylene with oxygen to produce the required depth of anesthesia although the amount of these agents is definitely decreased when pentothal is first used as a basal anesthetic. Ether is contraindicated as a supplemental anesthetic

A dose of pentothal sodium administered rectally will produce a hypnotic effect within 10 to 15 minutes after administration and reach its maximum effect in about 30 minutes. The duration of action is about one hour; after this time the patient slowly begins to awaken.

The drug is supplied by Abbott Laboratories in vials containing 3 grams. For use 3 grams of the material is dissolved in 30 cc. of water making a 10 percent solution which is green in color. The dosage is calculated on the basis of 0.2 cc. of this solution per pound of body weight. The calculated amount is administered rectally by syringe through a small catheter. A total dose of 3 grams should not be exceeded. Smaller doses, 0.6 gram per 50 pounds of body weight may be given.

OENETHYL HYDROCHLORIDE . . . is a new vasopressor drug for injection during spinal anesthesia to raise a depressed blood pressure. Chemically oenethyl is 2-methylaminoheptane and is supplied by the Bilhuber-Knoll Corporation as a 5 percent aqueous solution of the hydrochloride in 1 cc. ampules containing 50 mg. Oenethyl is used only to combat hypotension related to spinal anesthesia; its use may be harmful in hypotension due to shock or hemorrhage. When the fall in blood pressure is moderate or for prophylaxis to avoid an anticipated hypotension, oenethyl may be administered intramuscularly in doses of from 75 to 100 mg. In more severe hypotension (systolic pressure below 90 mm. of mercury) the drug is slowly injected intravenously in divided doses of 5 to 10 mg. (0.1 to 0.2 cc.) allowing 15 to 30 seconds to elapse between the administration of each fraction. Usually a total of 25 mg. is required to produce the desired effect, although as much as 50 mg. may be needed. The blood pressure should be checked continuously when administering this drug. To produce a more sustained rise in blood pressure the intravenous and intramuscular routes may be combined, giving 25 mg. in divided doses intravenously, and when the pressor effect is established, 50 mg. is injected intramuscularly. In emergencies when the systolic pressure is from 50 to 60 mm. immediate intravenous administration of 50 mg. is advisable.

MESANTOIN (PHENANTOIN) . . . has been released for general use by the Sandoz Chemical Work, Inc., 68 Charlton Street, New York City, 14. Mesantoin is an anticonvulsant drug indicated in the treatment of grand mal epilepsy and psychic seizures. It is available in tablets containing 0.1 gram. For a discussion of this drug and others used in the treatment of epilepsy see this publication, March-April (1947), page 48.

CARONAMIDE . . . is available for experimental use from Sharp and Dohme, Medical-Research Division, Glenolden, Pa. Under the trade name of Staticin, caronamide is prepared in 0.5 gram tablets. Caronamide is used as an adjuvant in penicillin therapy to inhibit the rapid excretion of penicillin by the kidney tubules, and thus not only increases the level of penicillin in the blood but also effects a more sustained blood level so that a given dose of penicillin will be effective for a longer period of time. Caronamide decreases the tubular excretion of penicillin by temporarily halting the tubular transport mechanism for penicillin excretion. Chemically caronamide is 4',carboxyphenylmethanesulfonanilide.

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WATER STILLS

for the hospital pharmacy

by

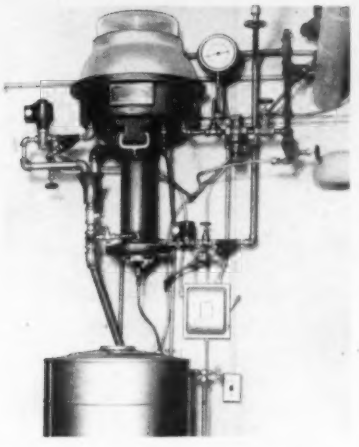
Edited by ALBERT P. LAUVE

If we consider manufacturing a normal function of the pharmacy it follows, therefore, that a reliable water still of sufficient capacity to meet all requirements of the department is absolutely necessary. The water still, in fact, is the most important piece of equipment in the hospital pharmacy. The type of service the pharmacy can render is too often limited by the available supply of distilled water.

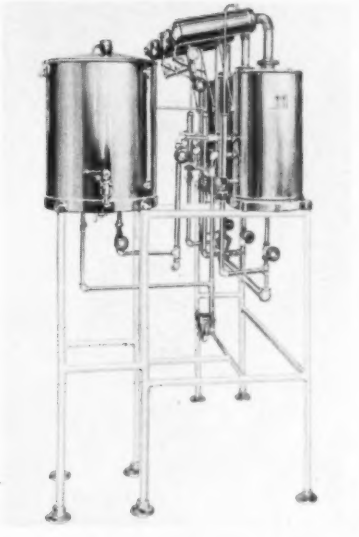
In purchasing a still there are four important considerations by which a hospital water still can be evaluated: (1)Where human lives are at stake the primary consideration is, of course, the purity of the distillate. (2) Dependability. The quality of the water produced should be constantly at the same high level of purity. (3) Next in importance, from the hospital viewpoint, is how much time and attention the equipment requires. (4) Operating cost. Economy is, and should be, of minor importance to a hospital, but it is a factor none the less.

There are a number of good water stills on the market. Models are available with capacities to produce distilled water in any required quantity; and various automatic controls, storage tanks and other special equipment as may be needed to meet specific requirements can be obtained. It must be borne in mind, however, that these same firms also manufacture what is commonly known as commercial stills for use in industry, where the purity of the distilled water is of no serious concern. So in selecting a still make certain that you know the make and the type of still you want and that the manufacturer understands your specifications. Do not take the salesman's word, or permit the purchasing agent to select what he thinks is the best still for the hospital pharmacy.

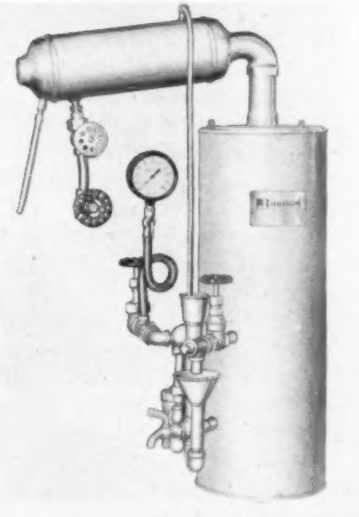
Having agreed on the type of still best suited to your requirement, the next thing to consider is the rated capacity of the still. Do not underestimate your distilled water requirement. Your immediate needs may seem small, but allowance must be made for future expansion and greater activity in manufacturing. No hospital can have an over supply of distilled water.



STOKES NO. 1 STEAM STILL WITH STORAGE TANK

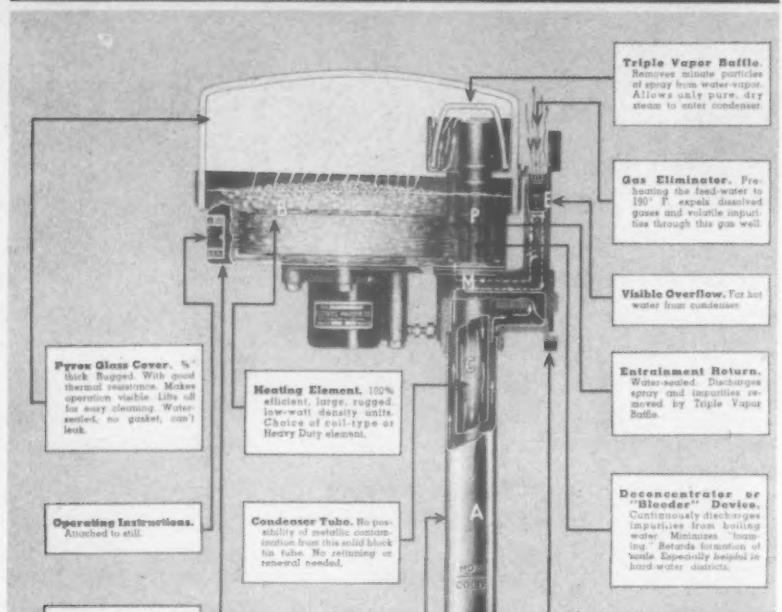


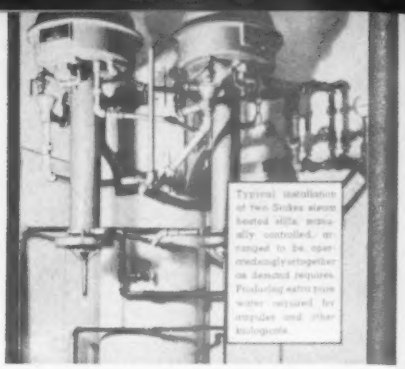
BARNSTEAD STEAM-HEATED TRIPLE DISTILLED WATER OUTFIT WITH TANK



BARNSTEAD STEAM-HEATED TYPE "Q" STILL

Operating Principle . . .


Triple Vapor Baffle. Removes minute particles of spray from water-vapor. Allows only pure, dry steam to enter condenser.
Gas Eliminator. Pre-heating the feed-water to 190° F. expels dissolved gases and volatile impurities through this gas well.
Visible Overflow. For hot water from condenser.
Entrainment Return. Water-sealed. Discharges spray and impurities removed by Triple Vapor Baffle.
Deconcentrator or "Bleeder" Device. Continuously discharges impurities from boiling water. Minimizes "foaming." Retards formation of scale. Especially helpful in hard-water districts.
Bracket for Convenient Wall Mounting. Strong brass casting.
Needle Valve. For adjusting volume of feed-water.
Discharge Funnel. Solid block tin funnel and pipe.
Pyrex Glass Cover. ¼" thick Rugged. With good thermal resistance. Makes operation visible. Lifts off for easy cleaning. Water-sealed, no gasket, can't leak.
Heating Element. 100% efficient, large, rugged low-watt density units. Choice of coil-type or Heavy Duty element.
Operating Instructions. Attached to still.
Condenser Tube. No possibility of metallic contamination from this solid block tin tube. No retinning or renewal needed.
Boiling Chamber. Large area and capacity. Heavy copper. Tinned. Flat bottom, rounded corners. One-piece construction, no seams or joints.
Condenser Casing. Heavy, seamless-drawn copper tubing. Chromium plated.
Features of design and method of operation, as shown in the above sectional view of a Stokes No. 171-E electrically-heated still, are similar in all Laboratory and all single-effect Industrial models.



BARNSTEAD PURITY METER

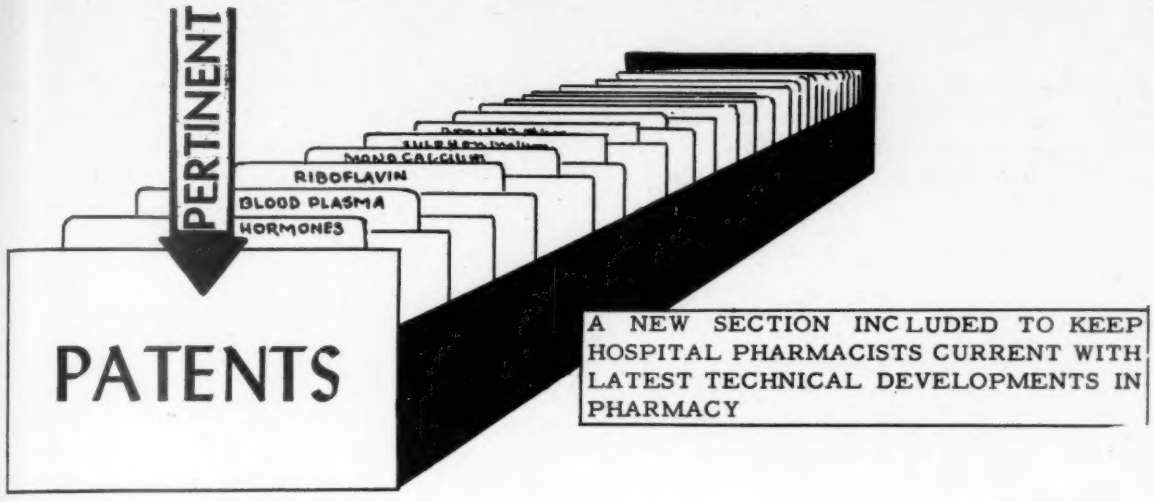
The method of heating must also be selected. A choice of models is offered, such as steam, gas, electrical, gasoline and kerosene, thus making it possible to select the still that will best meet local conditions by utilizing the most economical method of heating. Steam, however, if available, is the most efficient and the most economical.

The pharmacy is expected to prepare parenteral solutions of one kind or another and the distilled water used in preparing these solutions must be sterile, chemically-pure and pyrogen-free. This has led to elaborate methods of keeping the water pyrogen-free, by double and triple distillation. A triple still, however, not cleaned periodically is no safer than a single still. Under most water conditions, a single distillation produced by a properly designed still which operates at low vapor velocity and is equipped with a proper type of multiple baffle, continuous deconcentrator and provision for elimination of gaseous impurities, will produce distilled water that is safe for intravenous use. Multiple distillation is particularly desirable in institutions where many persons of varying experience may operate the equipment and where careful operation and regular maintenance is not assured.

A daily check of the distilled water is most desirable. The Barnstead Purity Meter provides hospitals with a quick and easy routine check-test of distilled water purity. Changes in water purity, contaminations from improper handling--all can be readily detected by the regular use of this handy device. The purity meter is a compact electrical conductivity bridge that indicates the purity of distilled water, on a scale calibrated from 0 to 15 parts per million ionizable impurities, in terms of sodium chloride. This instrument does not directly detect the presence of pyrogens in the water. It does, however, detect contamination of distilled water due to leakage, carry-over and careless handling that might result in pyrogenic contamination.

Distilled water storage tanks provide an economical means of collecting and storing distilled water in the pharmacy. The laboratory type tank is a cylindrical all-metal tank constructed of copper, coated with pure tin on all interior surfaces. These tanks may be fitted with a steam heating coil so that the tank and its contents may be sterilized periodically by boiling. The tanks may be supplied separately or on combination floor-stand with still.

The Barnstead Still and Sterilizer Co. Inc., 2 Lanesville Terrace, Forest Hills, Boston, Massachusetts and The F J. Stokes Machine Co., Tabor Road, Olney P.O. Philadelphia, Pennsylvania will gladly supply interesting information on water stills especially selected for hospitals.



INJECTIBLE AMINO ACIDS

Melville Sanyun (to Sterling Drug Inc.). U. S. patent 2,411,897. The preparation is described of stable solutions of amino acids adapted for injection into the human body and intended as substitutes for blood or blood plasma to furnish protein requirements. The solution of amino acids may be obtained by acid hydrolysis of casein or prepared as an aqueous solution of the various amino acids and approximating the composition of the solution made by hydrolysis. The solution, if prepared from casein, is freed of humin and excessive minerals. The stabilizing agent is described as a hydrophilic colloid and may include gelatin, starch, pectin, hydrolytic products of pectin and pectin, alginic acid, alginates, etc. A stable solution, one that does not form a precipitate in over 7 months, was made by adding 50 grams of pectin and stirring, to 10 liters of approximately 15% by weight aqueous amino acid solution. The mixture was stirred for 1 hour, autoclaved at 120° for 30 minutes or longer under 15 pounds per square inch pressure, cooled to room temperature, filtered, and again autoclaved to insure sterility. The resulting liquid was clear. Another method is to treat 200 grams of pectin with enough ethyl alcohol to cover the solid and stir for 30 minutes or longer. Excess ethyl alcohol is decanted, the moist pectin added to 10 liters warm distilled water, the acidity adjusted to pH between 3 and 4, and stirring until solution is complete. The pectin solution is autoclaved for 30 minutes or longer, clarified by filtration, and added to an equal amount of 10% amino acid mixture. The 5% amino acid and 1% pectin solution is filtered and sterilized either by autoclaving or passing through bacterial filters, such as the Seitz, Berkefeld, Mandler, or Chamberland filters. Chemical Abstracts, 41:1392, March 10, (1947).

STABLE FERROUS SULFATE

Ernest Preiswerk (to Hoffman-LaRoche Inc.) U. S. patent 2,411,636. A method is described of removing a portion of the water of crystallization from the hydrated salt, without oxidation, and triturating for the purpose of making pills from the powder. The crystalline salt ($FeSO_4.7H_2O$) is dried in vacuo at 50° or in air after pulverizing, mixed with at least one-fourth of its initial weight of ascorbic acid, and ground in a porcelain ball-mill. The product is stable for an indefinite period. Chemical Abstracts, 41:568, January 20, (1947).

STABLE BARBITURATE SOLUTIONS

Milton T. Bush (to Mallinckrodt Chemical Works). U. S. patent 2,408,289. Stable solutions of barbituric acids are prepared in paraldehyde, triacetin, or other suitable organic solvents. These solutions have the advantage over the ordinary aqueous solutions of sodium barbiturates in not being alkaline and therefore nonirritating. The barbituric acids used must be soluble to at least 10% and preferably 30% in the paraldehyde. These solutions can be autoclaved and are suitable for intramuscular, intravenous, and oral administration. Chemical Abstracts, 41:568, January 20, (1947).

MIXING INCOMPATIBLE VITAMINS AND MINERALS

Carl N. Anderson (to Lever Brothers Co.) U. S. patent 2,410,417. Incompatible vitamins and minerals are compressed into one tablet by first coating the separate ingredients with an organic plastic or resinous film-forming material, such as

cellulose ethers, esters, and acetates, copal, myrrh, styrax, benzoin, dammar, polyvinyl compounds, urea-formaldehyde resins, and glyptals. The coating is accomplished by thoroughly mixing the ingredient in a solution of the coating material in an organic solvent followed by evaporation of the solvent. Chemical Abstracts, 41:568, Januarey 20, (1947).

AQUEOUS SOLUTION OF RIBOFLAVIN

John C. Bird and Andrew Kuna (to William S. Merrell Company). U. S. patent 2,407,624. Riboflavin one of the least water-soluble B vitamins, can readily be brought into solution with gallic acid or its alkali salts. Ten cc. of a 10% solution of gallic acid in 50% aqueous ethyl alcohol dissolves 14 mg. of riboflavin. Sodium gallate in 10% aqueous solution at pH 6.7 dissolves 58 mg. riboflavin in 10 ml. at 24.5°. Potassium gallate under similar conditions dissolves 73 mg. in 10 ml. and lithium gallate, 60 mg. The solutions can be used for injections or for manufacturing of multivitamin preparations for oral use. By using sorbitol monolaurate as solubilizer for vitamins A and D in addition to gallates, water solutions can be prepared which contain these fat soluble factors in addition to all essential water soluble vitamins. Dry mixtures of riboflavin and the salts of gallic acid dissolve readily in water. Chemical Abstracts, 41:569, January 20, (1947).

TOCOPHEROL DERIVATIVE

Lee Irvin Smith and William B. Renfrow, Jr. (to Regents of the University of Minnesota). U. S. patent 2,407,726. The calcium salt of the acid succinate of α-tocopherol is described. Its vitamin E activity is equivalent to its α-tocopherol content, and it has the advantage of being a solid. It is prepared by treating α-tocopherol with propyl magnesium chloride in ether at room temperature and adding a solution of succinic anhydride in dioxane. After standing overnight and heating for 4 hours, the mixture is decomposed with water, acidified, extracted with ether, and evaporated to dryness. The residue is dissolved in methyl alcohol, neutralized with concentrated ammonia, and precipitated with a solution of calcium chloride in methyl alcohol. The calcium salt $(C_{33}H_{53}O_5)_2Ca$, is recrystallized from hot dioxane and precipitated with acetone. It is a white solid, melts at 214-15°, readily soluble in ether and ligroin, moderately soluble in alcohol and hot dioxane, and insoluble in water and acetone. The sodium salt is a slightly hygroscopic solid that lathers when shaken with water but is only very slightly soluble in water. Similar compounds are formed with maleic, phthalic, and glutaric anhydrides. Chemical Abstracts, 41:569, January 20, (1947).

MEDICATED SURGICAL DRESSINGS

Harry Sobotka (to Mount Sinai Hospital Research Foundation, Inc.). U. S. patent 2,408,818. A surgical dressing containing sulfa compounds (sulfanilamide or its derivatives, including "Prontosil Red") is prepared by impregnating surgical gauze with solutions of sulfa compounds and methyl or ethyl cellulose at a pH below 9. Aqueous solutions of sodium or diethanolamine salts of N^1 – acetylsulfanilamide or methyl alcohol and ethyl alcohol solutions of free acid sulfa compounds are used. Methyl or ethyl cellulose may be used to increase the viscosity of the impregnating solutions, thereby increasing the ability of the fiber to retain the sulfa compound Development of color in gauze may be controlled by use of impregnating solutions having a pH less than 9, use of 1:1000 sodium sulfite, use of light-proof containers, and storing in evacuated containers. Chemical Abstracts, 41:570, January 20, (1947).

PHARMACEUTICAL EMULSIONS

William H. Alton and Francis E. Hutchins (to R. T. Vanderbilt Company, Inc.) U S. patent 2,409,338. An oil-in-water emulsion prepared by emulsifying a viscous petroleum oil with a gel of hydrated silicates of magnesium, aluminum, and calcium or complexes of these silicates, including Bentonite, is suitable for use in ointments, creams, emollients, soap mixtures, and similar cosmetic or pharmaceutical preparations. An aqueous suspension of silicates (5-10%) etc. centrifuged at 800-1500 grams and a suspension containing 1-5% of solids is drawn off and used to emulsify petroleum oil by conventional methods. Emulsions prepared contain petroleum oil 1-65, water 98-34, and inorganic gel solids 0.75-10% by weight. Chemical Abstracts, 41:570, January 20, (1947).

ORGANIZATION NEWS

Edited by HERBERT L. FLACK

CHIEF PHARMACIST, JEFFERSON MEDICAL COLLEGE HOSPITAL, PHILADELPHIA

THOUGHT FOR THE MONTH: Send a list of officers for the coming year, to the editor of this Section. The new officers will be listed in the next issue of THE BULLETIN.

A WELCOMING HAND - The editors extend a welcoming hand to the following organizations which are new to these pages. Best wishes for rapid growth and increasing strength of these groups is sent through this Section. Early affiliation of local groups is suggested to help make a powerful national organization. It is hoped that complete, illustrated accounts of the group meetings will be forwarded to this Editor each month.

Florida Association of Hospital Pharmacists
Hospital Pharmacists Association of Greater St. Louis
Cincinnati Society of Hospital Pharmacists
Wisconsin Society of Hospital Pharmacists

HOSPITAL PHARMACISTS ASSOCIATION OF SOUTHERN CALIFORNIA

No meeting was held in April. The Good Samaritan Hospital in Los Angeles was host to the group on 1 May. The Upjohn Company presented an interesting movie, following which the subject of affiliating with the American Society of Hospital Pharmacists was discussed. Further discussion is planned and a decision will be made at the June meeting. (Ed. note - To be a representative, strong organization, the A.S.H.P. needs cooperation and support of all local organizations. Affiliation is most desirable.)

FLORIDA ASSOCIATION OF HOSPITAL PHARMACISTS

Mrs. Anna D. Thiel helped organize a meeting of hospital pharmacists at the recent meeting of the Florida Pharmaceutical Association held in Tampa. Through activities of Mrs. Thiel, president of the State Association, and others, the hospital pharmacists met in regular sessions. Discussions of interest to all formed the program for these sessions. Officers were elected for the coming year. Mrs. Thiel was given outstanding recognition for her valuable organizational activities. Her Department was acclaimed the largest and most outstanding hospital pharmacy south of Atlanta.

HOSPITAL PHARMACISTS OF CHICAGOLAND

April meeting on the 15th at Illinois Union Building. Interesting discussions were presented on "Antispasmodics," through papers read by Miss Moburg, Miss Hatter, and Mr. Gdalman. Forty members were present.

May meeting on the 13th in the Bankers Building. E. R. Squibb and Sons presented a movie on "Penicillin in Medicine and Surgery." A discussion period followed with much interest shown by those present. Due to Mr. Cole's moving to Detroit, Miss Mabel Kettering, Chief Pharmacist, University of Chicago Clinics, has been appointed corresponding secretary.

MASSACHUSETTS SOCIETY OF HOSPITAL PHARMACISTS

No April meeting. The May meeting on the 21st was held at the Parker House in Boston. Lederle Laboratories was host at dinner and a

movie "Folvite in Treatment of Anemias" was shown. Thirty-one members were present. Five new members were welcomed.

MICHIGAN SOCIETY OF HOSPITAL PHARMACISTS

Meeting in the Auditorium of Grace Hospital, Detroit, fifty-seven members and guests were present for the April meeting on the 24th. Dr. Robert Moehlig, chief of staff at Harper Hospital, gave an excellent illustrated lecture on "Endocrine Abnormalities." Dr. Moehlig's collection of slides on this subject is one of the world's best. At the regular business meeting, an increase in yearly dues to $5 was voted. A Nominating Committee was appointed, with George Phillips as chairman. Meeting adjourned at 10 P.M. following which Carl Abend invited the group to a buffet supper.

On May 5th through 8th, the MSHP was well represented at the Tri-State Assembly in Chicago.

Squibb was host for the May meeting, held on the 15th at Hotel Durant in Flint, at which 107 members and guests were present. Mr. Ralph Houston, superintendent of Hurley Hospital of Flint greeted the group. Paul Cole, a foreigner from Chicago, was welcomed to the group and responded with a humorous account of his "First Impressions of Detroit." Following the speakers a film on "Intocostrin in Surgery" was shown.

HOSPITAL PHARMACISTS' ASSOCIATION OF GREATER ST. LOUIS

Latest advices from this group indicate that application for membership in the ASHP was made the first of the year, with no acceptance. This group, new to these pages, is not new, however, having been organized March 12, 1940. Average meetings find 30 to 40 members in attendance. No specific information on the April-May meetings was furnished.

NEW JERSEY SOCIETY OF HOSPITAL PHARMACISTS

Rutgers College of Pharmacy was the place of the April 17th meeting. Mr. George Lill of Paterson General Hospital spoke on "Hospital Formularies Versus Proprietaries." A suggestion was made to inform the hospital pharmacists of southern New Jersey of the value of joining this group.

At the 15th of May meeting, papers were read for presentation to the Program Committee of the August Convention. 14 members were present at both April and May meetings.

GREATER NEW YORK CHAPTER OF THE AMERICAN SOCIETY OF HOSPITAL PHARMACISTS

April 23 meeting was held at St. Joseph's Hospital, Far Rockaway. Long Island. Twenty members were present to enjoy an instructive talk on "NF VIII."

Twenty-two members were present at the May 28 meeting at St. Mary's Hospital, Brooklyn. Sr. Etheldreda presented a most interesting demonstration of the preparation of parenteral fluids.

THE SOCIETY OF HOSPITAL PHARMACISTS (METROPOLITAN AREA) (NEW YORK CITY)

April meeting on the 3rd at Columbia University College of Pharmacy. Dr. Lee C. Huyck, head of the Department of Pharmacy of Columbia University, presented a review of new formulae and preparations official in the new NF VIII. Mr. Morris Dauer, president of the Metropolitan group, spoke on prescription writing based on the new NF VIII. All present learned much from these two talks.

This group met again on 1 May at Columbia University College of Pharmacy. Dr. S.H. Jaros, medical research scientist from Burroughs-Wellcome, presented a review of the field of digitalis therapy, specifically dealing with the modern digitalis glycosides. Both meetings were well attended by hospital and retail pharmacists, physicians and other personnel of the medical profession.

CINCINNATI SOCIETY OF HOSPITAL PHARMACISTS

First meeting of this group, a newcomer to these pages, was the occasion of a visit by Dr. Fischelis of the A.Ph.A., and Mr. Ford, secretary of the Ohio State Board of Pharmacy, on May 27. Fourteen hospital pharmacists were present to hear these men speak. Application blanks for ASHP-APHA membership were distributed. Plans were made for future meetings. This is another local group that needs to affiliate with the A.S.H.P.

CLEVELAND SOCIETY OF HOSPITAL PHARMACISTS

This group met April 30th at the Lutheran Hospital Nurses' Home. A group photo was taken and will be published in the next issue. Changes to the local Constitution and By-Laws were voted changed. Mr. Miller and Mr. Nevel summarized the group's activities at the April Convention of the O.S.H P. A report of activities with regard to placing a hospital pharmacist on the State Board of Pharmacy was presented. A hospital pharmacist would be eligible for such position. Two new members, Miss McKee and Mrs. Falzine, were presented to the Society. Seventeen members were present.

The annual dinner was held at the Sweden Manor on 28 May. 22 persons were present to hear Mr. Harvey Whitney speak about the history of hospital pharmacy and the beginnings of the A.S.H.P Election of officers took place and will be reported in the next issue.

TOLEDO SOCIETY OF HOSPITAL PHARMACISTS

Second meeting of the year was held at St. Vincent's Hospital on March 11. Ten persons were present to join in a discussion of practical experience regulations of the N.A.B.P., and a discussion on narcotics. Due to the meeting of the O.S.H.P. in April, the April meeting was cancelled.

OHIO SOCIETY OF HOSPITAL PHARMACISTS

The seventh annual meeting of the O.S.H.P. was held April 8 and 9, at the Deshler-Wallick Hotel.

The first day began with a series of round table discussions with Rose Lenga as Chairman. Mrs. Scott led the discussion on need of a hospital pharmacist as a member of the State Board of Pharmacy. Mr. Wise led a discussion concerning the need for employment of a registered pharmacist in all hospitals that do compounding.

The second day, Mr. Wise, president of the O.S.H.P., gave an address of welcome. Dr. Earl Guth, professor of pharmacy at Ohio State University, spoke on "Collyria." Mr. Victor Keys, executive secretary of the Ohio State Pharmaceutical Association, spoke on "The Veterans Prescription Service" Dr. L. J. Klotz, dean of The College of Pharmacy, University of Cincinnati, spoke on "Pharmacy Moves Forward" "Hospital Experience as Related to Apprenticeship" was presented by Mr. Byron Spoon, president of the Ohio State Board of Pharmacy.

Luncheon was held at Scioto Country Club. Members were guests of a Columbus pharmaceutical manufacturer. After lunch, Elvin McCrody, a pharmacist at Ohio State University, spoke on on "Drugs of the Bible." Following this, there was an inspection tour of the Warren-Teed Products Company laboratories. Later in the afternoon, formal committee reports and election of officers were taken care of. Meeting adjourned in the evening with members attending a convention banquet.

PHILADELPHIA HOSPITAL PHARMACISTS ASSOCIATION

April meeting was held at the Benjamin Franklin Hotel. Sixty persons were present as guests of E. R. Squibb and Sons. Dr. Mann, medical director of Squibb, showed a movie on penicillin, following which he led a discussion on the subject.

On 27 May, this group met again, at the Philadelphia College of Pharmacy and Science. Election of officers and other business occupied the evening.

WISCONSIN SOCIETY OF HOSPITAL PHARMACISTS

On April 25th, at St. Michael Hospital in Milwaukee, a meeting was held. The Chief Resident Physician presented an interesting talk on "Newer Digitalis Preparations."

This group met again on May 16th at Sacred Heart Sanitarium, at which time election of officers and other business matters were settled for the year. Complete listings of officers of all groups will be published in the next issue.

SOUTHEASTERN HOSPITAL PHARMACISTS ASSOCIATION

Complete details of the meeting of this group in Biloxi, Mississippi were presented on page 79 and 80 of the March-April Bulletin.

CATHOLIC HOSPITAL ASSOCIATION CONVENTION

Plans for this Convention included a Pharmacy Section to meet on June 17th at Mechanics Hall in Boston. Sr. M. Etheldreda, chief pharmacist,

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NEWS ITEMS

AMERICAN SOCIETY OF HOSPITAL PHARMACISTS TO CONVENE IN MILWAUKEE AUGUST 24-30, 1947

The American Pharmaceutical Association with its affiliated organizations including the American Society of Hospital Pharmacists will hold its annual convention at the Hotel Schroeder, Milwaukee, Wisconsin, August 24-30, 1947.

Although details of the program are not yet available, the Society will meet on Monday and Tuesday, August 25 and 26 devoting the morning of the first day to a tour of Milwaukee hospitals and the afternoon and evening of the first day to the reading of papers and a business session. On Tuesday, the sessions will begin with a breakfast which will be followed by morning and afternoon sessions, one of which will be the final business session. The executive Committee will hold a meeting Sunday evening prior to the opening of the Society's sessions. The business meetings this year are of exceptional importance to all members. At this convention the membership will vote on the adoption of the Division of Hospital Pharmacy as proposed by The Council of the American Pharmaceutical Association and the Executive Committee of the American Society of Hospital Pharmacists. All members are urged to make their reservations early and to attend this convention.

SISTER M. CLARA FRANCIS APPOINTED TO POLICY COMMITTEE

Newest member to be appointed to the Policy Committee of the Division of Hospital Pharmacy is Sister M. Clara Francis, chief pharmacist of St. Joseph Hospital, Memphis, Tennessee who was selected by the Catholic Hospital Association as its representative.

Other members of the committee are: Hans S. Hansen, chairman of the Society, John J. Zugich, chairman-elect of the Society, Evlyn Gray Scott, chief pharmacist, St. Luke's Hospital, Cleveland, Don E. Francke, editor of THE BULLETIN, Dr. E. R. Serles, president of the American Pharmaceutical Association, Dr. R. P. Fischelis, secretary of the American Pharmaceutical Association, and Worth L. Howard, executive director of City Hospital, Akron, Ohio, representing the American Hospital Association.

SALARY SURVEY TAKEN AT INSTITUTE

An informal salary survey was taken at the 1947 Institute of Hospital Pharmacy. It is emphasized that the figures presented represent average salaries. Thus in the second line of figures $2450 was the average salary of 11 hospital pharmacists; some may have been as low as $2000 and others as high as $3000. In cases where room and board were given in addition to a cash salary, an allowance of $800 was made and added to the cash figure. There were 79 pharmacists reporting; the highest salary was $6700 while the lowest was $1600. From the results obtained, the number of beds in the hospital does not necessarily determine the salary of the pharmacist since in the two highest pay brackets hospital pharmacists from institutions of less than 200 beds were represented.

Number of Pharmacists	Average Annual Salary	Hospital Beds
1	$1600	300
11	2450	110 to 2300
41	3420	100 to 1200
15	4230	100 to 1200
4	5220	125 to 660
4	6240	175 to 1700

HOSPITAL PHARMACIST CHOSEN TO PRESENT LASCOFF MEMORIAL LECTURE

The third annual J. Leon Lascoff Memorial Foundation Lecture, sponsored by the Connecticut Association for the Advancement of Professional Pharmacy, was delivered in New Haven May 27, by Don F. Francke, chief pharmacist of University Hospital, Ann Arbor, Michigan. Speaking in the Medical Society Building, he discussed "New Therapeutic Agents of Interest to the Pharmacist and Physician".

In honor of Dr. J. Leon Lascoff, late pharmacist universally regarded as the leading American pharmacist and who furnished the inspiration for the founding of the Connecticut Association for the Advancement of Professional Phar-

macy, the association annually selects the pharmacist or scientist who has contributed the most outstanding work in the field of pharmacy. This year's recipient was chosen by a committee consisting of John J. Dugan of New Haven, chairman, Dr. William T. Slater, professor of pharmacology at Yale School of Medicine, Dr. Reginald Gillson, New Haven, dermatologist, John J. Zugich, pharmacist-in-chief at New Haven Hospital, William Silver of West Haven, and Joseph Siladi of Stamford.

FULL CREDIT FOR PRACTICAL EXPERIENCE IN HOSPITALS APPROVED.

All eight districts of the Association of Boards and Colleges of Pharmacy have passed resolutions recommending that a full year of credit be allowed for practical experience obtained in hospital pharmacies and that furthermore such experience be accepted as satisfactory for reciprocity requirements.

AMERICAN HOSPITAL ASSOCIATION TO MEET IN ST. LOUIS

The 49th annual convention of the American Hospital Association will be held in St. Louis for the usual four-day period beginning Monday, September 22. The American Society of Hospital Pharmacists will sponsor an educational booth at this convention. Details of the program of the Pharmacy Section will be published in the next issue of this publication. All hospital pharmacists in the St. Louis area are urged to attend these meetings.

COVER PHOTO

This months cover photo illustrates a portion of the educational exhibit sponsored by the American Society of Hospital Pharmacists at the Catholic Hospital Association Convention in Boston June 13 to 19.

The booth was arranged and in charge of Sister Clara Francis, chief pharmacist of St. Joseph Hospital, Memphis Tennessee. Space for the exhibit was given without charge by the Catholic Hospital Association. Through the efforts of Sister Clara Francis the expenses for furniture rental and posters were met without cost to the Society.

The background of the booth was made up of the Society emblem and several posters depicting various hospital pharmacy activities. The counter space in the right foreground was used to display hospital formularies while the other side of the booth contained the books suggested in "A Well-Balanced Basic Pharmacy Library" which was recommended by the Society, the American College of Apothecaries and the American Pharmaceutical Association about a year ago. Also displayed were several of the less common parenteral solutions. A full time attendant from St. Joseph Hospital, Memphis, was present at the booth to answer the questions of the many visitors.

PHARMACY IN FLORIDA HOSPITALS PROMOTED

Hospital pharmacy, and pharmacy in general, made important progress in Florida at the recent meeting of the Florida Pharmaceutical Association at Tampa. According to Mrs. Anna D. Thiel, chief pharmacist, Jackson Memorial Hospital, Miami, the association agreed to promote a better understanding of the Florida law, which requires competent, registered pharmacists to dispense and compound prescriptions in the drug stores and hospitals of the state. The Florida Hospital Pharmacists Association, of which Mrs. Thiel is charter president, endorsed this measure wholeheartedly at the same convention.

According to May 16th press release in the Miami Herald and the Miami Daily News, the Florida law protecting the public — both in drug stores and in hospitals — has for its main theme the requirements that "compounding or dispensing drugs, medicines, or chemicals for medicinal use, or compounding or dispensing physicians' prescriptions shall be done by a competent, fully qualified and graduate pharmacist passing the Florida State Board's Requirements."

Mrs. Thiel, who was this year elected president of the Southeastern Hospital Pharmacy Association, is doing valuable work towards raising the standards of hospital pharmacy, and pharmacy in general.

AKRON HOSPITAL PHARMACISTS ORGANIZE

Akron Hospital Pharmacists have organized the Akron Hospital Pharmacists Society. The first meeting was held in November, 1946. It was agreed to hold meetings monthly rotating the hospitals each month. The meetings this year have consisted of discussion periods of mutual problems and plans for the formation of a permanent organization. The plan has been enthusiastically received by all members.

The group has been asked to participate with

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POSITIONS in hospital pharmacy

ARIZONA . . . A hospital pharmacist is wanted at the Good Samaritan Hospital, 1033 East McDowell Road, Pheonix. This is a 200 bed general hospital. For further information write to G. M. Hanner, assistant superintendent.

SOUTH DAKOTA . . . A hospital pharmacist is wanted at the 140 bed McKennan Hospital, Sioux Falls. For additional information write to Sister Mary Monica, superintendent.

CALIFORNIA . . . An excellent opening is available in California for a specially trained man in hospital pharmacy to become a member of a staff that now consists of two pharmacists and a helper. The intention is to obtain an individual who is thoroughly conversant with hospital pharmacy as a specialty and who is acquainted with the ramifications necessary to be developed in keeping with good hospital pharmacy today. This position of staff pharmacist can possibly pay $350 per month for an individual with extensive hospital pharmacy internship training. Those interested may communicate with Mr. Walter Oliver, Acting Administrator, Children's Hospital for Women and Children, 3700 California Street, San Francisco 18, California.

POSITIONS WANTED

JOANNE A. BRANSON . . . 1522 Northland Avenue, Lakewood, Ohio would like to obtain an internship in hospital pharmacy. Miss Branson is a graduate of Western Reserve University, School of Pharmacy, finishing in June 1947.

OTHERS . . . The following individuals have expressed an interest in obtaining a position in hospital pharmacy. If you have an opening in your department and wish to employ a pharmacist, you may contact the pharmacists listed below:

Miss Lucy A. Dexter
829 Temperance Street
Saskatoon, Saskatchewan
Canada

Miss Betty Little
School of Pharmacy
University of Georgia
Athens, Georgia

Miss Charlotte E. Cox
1620 R Street
Lincoln, Nebraska

Miss Mary E. Poffenbarger
16629 Stansbury Street
Detroit, Michigan

INTERNSHIPS AND GRADUATE STUDY IN HOSPITAL PHARMACY . . . The Philadelphia College of Pharmacy and Science, the Jefferson Medical College of Philadelphia and the Jefferson Hospital announce a cooperative program of graduate study and training in the field of Hospital Pharmacy. The program will commence with the Fall 1947 term.

Candidates studying under this program must be graduates of an approved College of Pharmacy with at least a Bachelor of Science degree in Pharmacy. The period of instruction and training will run for two years. It will include graduate studies taken at both the Philadelphia College of Pharmacy and Science and the Jefferson Medical College and internship in the Pharmacy of Jefferson Hospital. Graduate students engaged in this program will live in the Jefferson Hospital.

During the two years, students will take such courses as Manufacturing Pharmacy, Pharmacology, Bio-chemistry and Hospital Pharmacy Administration. A complete and well-rounded experience in the functioning of a modern hospital pharmacy and its relationship to the other departments in the hospital will be given. Upon the completion of the two year period of study and training students will be awarded the degree of Master of Science in Pharmacy and certified as competent to assume charge of a Hospital Pharmacy.

The tuition each year will be $200.00 but students entering this training program will be fur-

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NEW MEMBERS

ARKANSAS

Sewall K. Kepner
550 Cypress St., P.H.
Little Rock, Arkansas

Loren J. Leonard
Veterans Hospital
Fayetteville, Arkansas

CALIFORNIA

Lynn A. Cameron
2703 E. Florence Ave.
Huntington Park, California

Michael Caruso
416 N. Norton
Los Angeles, California

H. Watson Dreyfus
780 E. Gilbert
San Bernardino, California

Walter F. Hitzelberger
9730 Regent St.
Los Angeles, California

Ida Koplin
1838 El Cerrito Place
Hollywood, California

Luba Perlmutter
415 W. Orange Grove
Los Angeles, California

Mabel A. Poole
93 W. Las Flores Dr.
Altadena, California

Victor L. Reddick
Rancho Los Amigos
Hondo, California

Bessie J. Waddell
8466 Victoria Ave.
South Gate, California

COLORADO

Dorothy W. Shelby
623 Clermont
Denver, Colorado

CONNECTICUT

Edward Mogull
1260 Main St.
Bridgeport, Connecticut

Arthur T. Smithwick
201 E. Main St.
Middletown, Connecticut

DELAWARE

Clarence Kershaw
1224 Washington
Wilmington, Delaware

ILLINOIS

Sr. Mary Tarcisia Bucki
2650 Ridgeway Ave.
Chicago, Illinois

Sr. M. Hortensis
1431 W. Claremont Ave.
Chicago, Illinois

Elbert E. Izumi
6148 Greenwood Ave.
Chicago, Illinois

Sr. Marguerite Lard
St. Elizabeth Hospital
Danville, Illinois

Harold E. Rupe
3928 W. Polk St.
Chicago, Illinois

Manuel W. Sievers
431 Bowen Ct.
Elgin, Illinois

Byron M. Thompson, Assoc.
1729 W. 106th St.
Chicago, Illinois

INDIANA

Richard K. Mulvey
R.R. 3
Lafayette, Indiana

John O. Noble
251 N. Randolph
Indianapolis 1, Indiana

Marvin K. Schroeder
1209 Washington
Michigan City, Indiana

Sr. N. Edwardilla Vianco
25 Douglas St.
Hammond, Indiana

Sr. M. Cosma Wetli
14th & Hartford
Lafayette, Indiana

IOWA

Nathan Betensky
692-33rd St.
Des Moines, Iowa

KANSAS

Richard F. Brant
Winter Veterans Hospital
Topeka, Kansas

Milford N. Wedel
433 S. Fountain
Wichita, Kansas

KENTUCKY

Frank L. Nutter
Veterans Administration
Outwood, Kentucky

LOUISIANA

Harriet A. Lichtenheld
3000 Corondelet
New Orleans, Louisiana

MAINE

Theodore R. Tibbetts
128 Grove St.
Augusta, Maine

MARYLAND

Charles R. Kerr
S. Washington St.
Easton, Maryland

MICHIGAN

C. V. Lynch, Assoc.
18662 Fairfield
Detroit, Michigan

Walter S. Wheeler, Assoc.
18314 Rutherford
Detroit, Michigan

Cohwell L. Wihlmett, Assoc.
656 Bloomfield
Birmingham, Michigan

MISSOURI

Oscar S. Nehring
3100 N. Grand
St. Louis, Missouri

Ewell J. Payne
504 Old Orchard
Excelsior Springs, Missouri

Sr. M. Pelagia, V.S.C.
801 Benton Ave.
Monett, Missouri

Herman M. Stern
5701 A. Easton Ave.
St. Louis, Missouri

Leroy A. Weidle, Assoc.
4500 Olive St.
St. Louis, Missouri

MONTANA

Hilmer Hansen
832 Broadway
Helena, Montana

NEW JERSEY

Robert Fialk, Assoc.
56 W. Kinney St.
Newark, New Jersey

Irving I. Kuskin
924 Bendermere Ave.
Asbury Park, New Jersey

George A. Lill
55 Pennington St.
Paterson, New Jersey

Paul E. Neilsen
100 Broadway
Hillsdale, New Jersey

Emanuel Salzberg, Assoc.
201 Ivy St.
Newark, New Jersey

Edith M. Schofield
P.O. Box 662
Atlantic City, New Jersey

William Schwartz
268 Palisade Ave.
Jersey City, New Jersey

Albert R. Struckmann
1800 Oakwood Ave.
Bogota, New Jersey

Rudolph Wilhelm
24 Maple St.
Keansburg, New Jersey

NEW YORK

Betty J. Hagenar
464 Western Ave.
Albany, New York

Harry P. Heflich, Assoc
98 Vermilyea Ave.
New York, New York

OHIO

Richard W. Johnston
719 Lincoln Park Dr.
Cincinnati, Ohio

Herman Shapiro
Box 33, VA Center
Dayton, Ohio

OKLAHOMA

Conrad J. Masterson
230 N.W. 16
Oklahoma City, Oklahoma

PENNSYLVANIA

John J. Finney
3409 Ridge Ave.
Philadelphia, Pennsylvania

Joseph J. Grochowski
P.O. Box 313
Mayview, Pennsylvania

J. B. Merrick
31 Cricket Ave.
Ardmore, Pennsylvania

Robert A. Statler
52 Harwood St.
Pittsburgh, Pennsylvania

SOUTH CAROLINA

SOUTH DAKOTA

Laura M. Carroll
St. Luke's Hospital
Aberdeen, South Dakota

TENNESSEE

Carl Brower Kuhn
3106 Overlook Drive
Nashville 5, Tennessee

Bascom R. Teague
781 Shotwell St.
Memphis, Tennessee

TEXAS

VIRGINIA

Othmar F. Goriup
1311 Cleveland St.
Alexandria, Virginia

Sam Labson
1523 Brandon Rd.
Roanoke 15, Va.

WISCONSIN

Sr. Liquora
St. Nicholas Hospital
Sheboygan, Wisconsin

Sr. M. Emerentia Reising
St. Francis Hospital
LaCrosse, Wisconsin

ORGANIZATION NEWS

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St. Mary's Hospital, Brooklyn was presiding officer. Theme of the program was "Advances in the Hospital Pharmacy Services of the General Hospital," The educational booth was in charge of Sr. M Clara Francis, chief pharmacist, St. Joseph's Hospital, Memphis, Tennessee. A panel discussion on "The Feasibility of Manufacturing Sterile and Non-Sterile Preparations" was held and was of interest and value to all. Full details will be announced in the next issue of THE BULLETIN.

TRI STATE ASSEMBLY

The Pharmacy Section of this meeting was held on May 6 and 7 at the Palmer House in Chicago. Daily attendance was about 85. George Phillips of Ann Arbor, was in charge of the Program. The first day Mr Hans S. Hansen of Grant Hospital, Chicago, spoke on "Progress Report of the A.S.H P. for 1947" and presented greetings from the Society. Mr. Harvey Whitney of Dearborn, Michigan, spoke on "Inter-departmental Relations." Mr. Laurence T. Lyon of Hurley Hospital, Flint, Michigan, spoke on "Hospital Pharmacy Management." Dorothy E. Tobin of Foote Memorial Hospital, Jackson, Michigan, presented the subject "Purchasing and Formulation of Basic Operating Policies Re: Refills, Ward Stocks, etc."

The second day Miss Jane Rogan of Deaconess Hospital, Detroit, Michigan, spoke on "A Cost Accounting System for a Hospital Pharmacy." Dr. Serles, President of the A.Ph.A. presented a paper for Dr. Fischelis, entitled, "Coordination and Development of Hospital Pharmacy as planned by the A.Ph.A and A.S.H.P." Paul Cole of Michael Reese Hospital, Chicago, concluded the meeting with abstracts on "New Drugs."

TIMELY DRUGS

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METOPON HYDROCHLORIDE . . . is a new analgesic drug available for use only for chronic pain relief in cancer cases. It can be obtained only by a physician from Parke, Davis and Company and Sharp and Dohme. It is available in 3 mg. capsules for oral use only. For additional information on this drug see other pages of this issue.

NEWS ITEMS

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the Summit County Pharmaceutical Association Round Table dinner meetings held monthly. Mutual problems between hospitals and retail pharmacies have been discussed and many things of interest to both organizations.

POSITIONS IN HOSPITAL PHARMACY

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nished with room and board in the hospital and a stipend of $50.00 per month during the academic year. The stipend will be increased to $100.00 a month during the summer months. A one month vacation period will be allowed if requested.

The above program has been arranged after a careful study of the recommendations of the Minimum Standards Committee of the American Society of Hospital Pharmacists and competent personnel will be placed in charge of the training program. All candidates wishing to make application for this graduate study should write to the Graduate Committee of the Philadelphia College of Pharmacy and Science for the necessary application form.